VOL. LXXXIII PART SEVEN

JOURNAL OF THE ROYAL HORTICULTURAL SOCIETY

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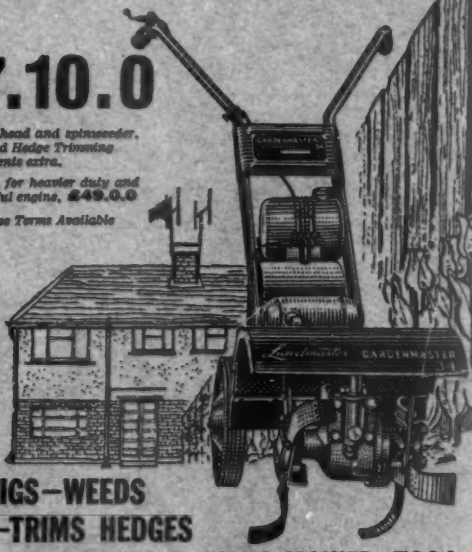

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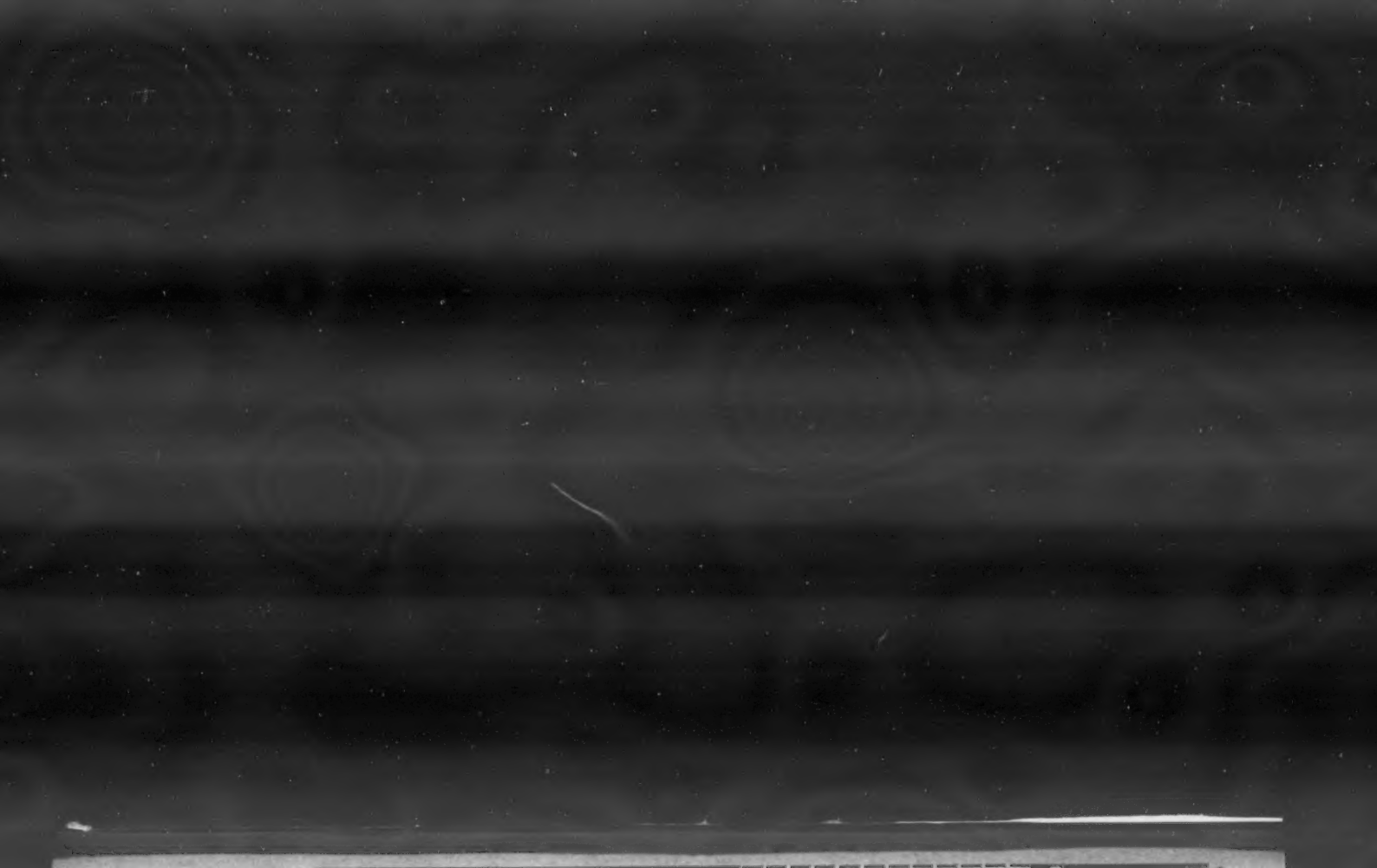

JOURNAL OF THE ROYAL HORTICULTURAL SOCIETY

VOL. LXXXIII PART SEVEN

July 1958

THE SECRETARY'S PAGE

ANNOUNCEMENTS—JULY AND AUGUST

Shows

TUESDAY, July 1 12 NOON to 6 P.M. WEDNESDAY, July 2 10 A.M. to 5 P.M.	Fortnightly Flower Show, in the New Hall. Delphinium Society's Show, in the Old Hall.
TUESDAY, July 8 12 NOON to 7 P.M.	National Sweet Pea Society's Show, in the New Hall.
TUESDAY, July 15 12 NOON to 6 P.M. WEDNESDAY, July 16 10 A.M. to 5 P.M.	Fortnightly Flower Show and Fruit and Vegetable Competition, in the Old Hall.
SATURDAY, July 19 12 NOON to 7.30 P.M.	British National Carnation Society's Show, in the Old Hall.
TUESDAY, July 29 12 NOON to 6 P.M. WEDNESDAY, July 30 10 A.M. to 5 P.M.	Fortnightly Flower Show, in the Old Hall.
TUESDAY, August 12 12 NOON to 6 P.M. WEDNESDAY, August 13 10 A.M. to 5 P.M.	Fortnightly Flower Show, in the New Hall. Gladiolus Competition and British Fuchsia Society's Competition, in the Old Hall.

Lectures

TUESDAY, July 1, at 3 P.M. "Sweet Peas", by MR. B. R. JONES.
TUESDAY, July 15, at 3 P.M. "Daylilies", by MR. H. J. RANDALL, C.B.E.

Lectures—*continued*

TUESDAY, July 29, at 3 P.M. "Varieties of Clematis and their cultivation", by MR. G. R. JACKMAN.

TUESDAY, August 12, at 3 P.M. "The use of Residual Herbicides in the Garden and Nursery", by MR. P. BRACEY.

Demonstrations at Wisley—The following demonstrations will be given at Wisley, that on the succeeding day or days being in each case a repetition of that given on the first.

July 2–3. Summer Pruning of Fruit Trees. (Commencing at 2 P.M.)

July 16, 17, 18. Vegetative Propagation of Shrubs and Herbaceous Plants. (Commencing at 2 P.M.)

Co-operative Display of Lilies—There will be a co-operative display of lilies at the Fortnightly Show on July 15 and 16. Members of the Lily Group are invited to bring or send lilies for this co-operative exhibit, and SIR FREDERICK STERN, the Chairman of the Group, has kindly undertaken to supervise the staging. Any member who would like to supply flowers for this exhibit is asked to let the Secretary of the Lily Group know, on or before Wednesday, July 9, the names of the lilies he proposes to supply and the number of stems, so that the necessary arrangements in regard to space, etc., may be made and cards prepared showing the names of the lilies and the names of the exhibitors.

Lily Group Meeting—There will be an "Any Questions ?" Meeting at 4.30 P.M. on Tuesday, July 15, in the Lecture Room in the New Hall.

At 7 P.M. on the same day, members of the Lily Group and their friends will dine together in the Restaurant of the New Hall.

Lily Conference—It is proposed to hold a Conference on Lilies and allied genera from July 7 to 10, 1959. Further particulars will be published on this page in due course.

Code of Nomenclature—A new edition of the *International Code for the Nomenclature of Cultivated Plants*, as formulated and adopted by the International Commission for the Nomenclature of Cultivated Plants, December 1957, may be obtained from the Society's offices, price 2*s*. 6*d*., post free.

Publications—*Roses*, by F. FAIRBROTHER, has recently been published by Penguin Books Ltd. This is the first of a series of illustrated handbooks prepared in collaboration with The Royal Horticultural Society. MR. FAIRBROTHER is Deputy-President of The National Rose Society. The book contains over 100 illustrations as well as text figures and may be obtained from The Secretary, The Royal Horticultural Society, Vincent Square, S.W.1. Price 5*s*., postage and packing 9*d*.

NOTES FROM WISLEY

N. K. Gould

WISLEY is so liable to suffer from the effects of late spring frosts that it is never possible to forecast with assurance what there will be to see in the Gardens during May. This year, however, our rather bold prediction was fully justified by events, for the rhododendrons, azaleas and later camellias gave a display which could hardly have been more lavish. After a cold and rather dry April the weather became warm and favourable to rapid development of flowers, and there was only the slightest hint of frost on one or two May nights. The effect was especially notable in the wild garden, where some of the larger rhododendrons in the north-west corner bloomed with remarkable freedom. *R. thomsonii*, 15 feet in height, *R.* 'Kewense', exceeding 30 feet, probably one of the first ever planted in this part of the Gardens, and *R. niveum*, represented by a huge globular specimen, were outstanding. Some others which in most years are spoiled by frost, but now showed themselves in their full beauty, are the dainty purple-flowered *R. reticulatum* and the sweetly-scented white and shell-pink forms of *R. decorum*, whose fragile corollas are easily disfigured by adverse weather.

The lilacs in Howard's Field flowered profusely and in perfect condition. The collection includes a large number of varieties, some of which are rarely seen as they are not to be found in the nurseries at the present time. Their colours, changing continuously as the flowers age, defy precise description. Some may be matched against the Horticultural Colour Chart, when it is found that despite differences perceptible to the eye many come within the range of the sheet appropriately named Lilac Purple (031). 'Souvenir de Louis Spaeth' is given in that work as an example of 031/1, a paler tint of Lilac Purple, but actually it matches more closely Pansy Violet (033), a bluer hue. 'Congo' and 'Ville de Troy' match 031, but the latter variety pales rapidly, and on the bush is very bright and attractive at a considerable distance. One of the earlier varieties, named 'Crépuscule', has broad-petalled flowers forming a shapely, smooth truss and matching a pale tint of Pansy Violet (033/2). This is strongly scented, and is a plant of great merit. Some others of character are 'Macrostachya', which makes a very shapely bush covered with long panicles of buds coloured a pale tint of Lilac Purple, opening Pastel Mauve (433), giving a quite charming effect; 'Firmament', one of the bluest, the fully open blooms touching Flax Blue (642/2), and particularly lovely in the evening light; and 'Primrose', which opens from buds of Naples Yellow (403) to pale tints of that hue.

By the time these notes are published the majority of the trees and shrubs which have made such a generous contribution to the spring display will have passed out of flower, but there are still many interesting specimens to be seen, and some of these can be found in the beds

and walls near the laboratory. Just inside the gates there is a bush of *Philadelphus coulteri*, a Mexican species of Mock Orange remarkable for its large, saucer-shaped, cream-coloured flowers, borne singly on short leafy lateral twigs. This is worth growing in a warm and sunny corner for its rich scent, but it is definitely tender. Good evergreen climbers are not very numerous, but the Chinese *Trachelospermum jasminoides*, if planted against a south wall, will produce clusters of fragrant white blossom for many weeks.

The most conspicuous shrub on the dry walls in front of the Curator's house is *Genista lydia*, now rather past its best. This is a dwarf species forming a hummock of angular, curved growths which cover themselves completely with yellow flowers. Near the west wall of the laboratory there is another excellent yellow-flowered plant, namely *Senecio laxifolius*, a grey-leaved New Zealand species suitable for dry banks or borders in mild districts. *Convolvulus cneorum*, growing near by, has silvery leaves and clusters of pink-flushed white flowers. It flowers intermittently here from the end of May to October. *Abelia schumannii* bears sprays of tubular, rose-pink flowers for many weeks, until it is succeeded by *A. grandiflora*, a semi-evergreen which can claim to be one of the very best autumn-flowering shrubs. Two others which flower here continuously through the summer and autumn are *Abutilon megapotamicum* and its hybrid *A. milleri*. The first is a slender-stemmed plant to be trained loosely to a south or west wall, and its vivid red and yellow flowers hang like little lanterns from the leaf-axils. The second is more bushy in habit and has larger yellow, red-veined corollas.

While in this part of the Gardens the visitor should see the collection of fuchsias flowering in the second glasshouse, and also inspect the small half-hardy house. This contains a miscellaneous collection of tender plants from many parts of the earth. One which always attracts a good deal of attention is *Haemanthus coccineus*, a member of a genus of about fifty Tropical and South African bulbous plants. After the immense strap-shaped spring leaves have withered, the bulb sends up short, speckled scapes bearing dense heads of scarlet flowers enclosed by rows of brilliant red bracts. Another genus almost confined in the wild state to the Cape Province is *Watsonia*, represented here by several species, one of the most brilliant being *W. beatricis*. This has long erect spikes of bright orange-scarlet flowers like small gladioli, and similar leaves. *W. pyramidata*, with larger rose-red flowers, can also be seen in this house, and other species grow in the frame near the temperate house. The only one which succeeds in the open air at Wisley is *W. ardernei*, which has tall stems of pure white blooms. Of the climbing Composite genus *Mutisia*, of which two or three species are grown here, the best is *M. oligodon*, a graceful plant with small oblong leaves tipped with long tendrils. The daisy-like flower-heads open in succession for several months, and each has up to twelve bright pink spreading rays. This and some other species are native to Chile, but can be grown out of doors in very mild districts.

In the temperate house there will, as usual, be a large variety of ornamental plants in flower. On the side stages potted specimens of pelargoniums, begonias, streptocarpus and achimenes flower for a long period; and these are supplemented by such larger specimens as *Jacobinia carnea*, with long panicles of pink blooms, *Ochna serrulata*, now carrying a heavy crop of black fruits with scarlet calyces, *Cestrum parqui*, the immense panicles of which exude a strong scent as evening approaches, and *Solanum wendlandii*, one of the most handsome members of the potato tribe with heavy bunches of light violet flowers terminating its vigorous growths.

The herbaceous borders will be at their best by the middle of the month. The plants in the new borders leading from the terrace to Battleston Hill are now thoroughly established and should give a very good display this year. Shrubs are planted at intervals along these borders, and when more fully grown they will improve the appearance by giving height and extending the flowering season. As in the old borders near the hostel, choice of plants is not limited to the newer horticultural varieties, but a selection of these is used in association with species of outstanding decorative value.

As examples of some of the modern cultivars represented in these borders we may draw attention to *Polemonium* 'Sapphire', a dainty plant for the front of the border, not over a foot high when beginning to flower in May, with plentiful sprays of purplish-blue blossoms.

Campanula 'Loddon Anna' is a seedling of *C. lactiflora* in which the amethyst flowers are a distinct break from the usual pale blue or milky-white. Among the many good phloxes, 'Duchess of York' with salmon-pink, white-eyed flowers, 'Bright Eyes', pale pink with cherry-red eye, and the deep lavender-coloured 'Amethyst' are notable. The erigerons have come to the fore in recent years with the introduction of new shades of colour, and of these the lilac 'Festivity' and 'Vanity' in pink are good examples. *Anchusa* 'Loddon Royalist' has some excellent qualities, being of erect and well-branched growth, and producing early in the season numerous deep blue flowers. Varieties of *Monarda* are available nowadays in brighter hues than the old ones, and as they continue in bloom for a long period they are to be recommended. 'Melissa' in a soft shade of pink, and the cerise-coloured 'Adam', are among those to be seen here.

Delphiniums, like other popular perennials of which large collections are to be found in the trial grounds, are not very largely represented in the borders, but the visitor will see examples of a few outstanding ones such as the popular gentian-blue Belladonna variety 'Wendy' and the unusual 'Pink Sensation', which stands quite alone in its peculiar colour.

Turning to species of character, *Crambe cordifolia*, a Caucasian relative of our native seakale, is planted at the lower end of the borders, where it develops a huge panicle, 6 feet high, of small white blossoms, rather like a gargantuan gypsophila. *Ligularia hessii*, a hybrid from a

cross between *L. clivorum* and *L. wilsoniana*, two giant Chinese senecios, is a noble plant with ample broad basal leaves and a stout spike, several feet tall, covered with large-rayed orange-yellow flower heads. An uncommon thistle, which soon forms a conspicuous clump, is *Cirsium rivulare* var. *atropurpureum*, a plant with branching stems terminated by ruby-red flowers. *Dracocephalum sibiricum* as grown here, is a strong growing, erect plant with many superposed tiers of large lavender-blue flowers. It has been distributed under several incorrect names, including *D. prattii* and *Nepeta macrantha*. One of the most distinct of the large and puzzling genus *Penstemon* is *P. isophyllus*, which has a shrubby base and very graceful flowering stems 4 feet or more in height, with numerous scarlet-crimson flowers. *Verbascum bombyciferum* is a stately biennial 4 to 6 feet high, clothed all over with white wool except for its sulphur-yellow flowers. It came from Asia Minor in 1930 and was sent out from a nursery in the first place under the name 'Broussa'.

Many more plants of equal interest are to be found here, but the visitor will find much to see in the trial grounds, in the annual border, the rose borders, and in the rock garden. In Seven Acres the water-lilies and Mock Orange varieties will claim attention.

CHOICE ROCK PLANTS

Roy Elliott

(*Summary of a lecture given on April* 1, 1958, THE HON. LEWIS PALMER, F.L.S., V.M.H., *in the Chair*)

THE precise definition of a "choice rock plant" would be interpreted in different ways by different people; the less enthusiastic might consider that the description is best fitted to those plants which—whilst possessing the essential virtues of beauty and longevity—require little or no attention from the gardener once they are planted. The enthusiastic plantsman, on the other hand, would doubtless consider that "the choice rock plant" is one which offers some sort of challenge to the grower, whilst possessing beauty or interest above the average, and any selection of such plants must conform to that cardinal and much disregarded doctrine that they must supply colour throughout the year. Nothing is more calculated to bring the rock garden into disrepute than the selection of plants which flower only in the spring, for no branch of horticulture is so well provided with species capable of providing interest and colour for almost every month of the year.

Having made my own personal selection of a few plants which I regard as "choice", I should perhaps begin by telling you that my plants are grown within a mile or so of the centre of a busy Midland industrial

town, where the annual deposition of soot and other solid matter, including harmful chemicals, is no less than 250 tons per square mile. An audience of gardeners will be the first to appreciate that this does not provide the most ideal growing conditions for the cultivation of plants garnered from the clear air of the mountains of the world. Yet in spite of this, one has little patience with those who maintain that choice plants will not grow in town gardens—difficulty there may well be, but impossibility, very seldom. Horticultural writers as a whole are apt to forget what a very large proportion of us gardeners are forced to live in town atmospheres, and they pay too little attention to the medium in which the plants are to grow. I can well imagine that for every choice rock plant which fails to grow because of atmosphere, there must be at least nine which fail through incorrect soil conditions. Rock stone is not the beginning and end of rock gardening—it is the end, and those who are interested in plants rather than rock should first consider how much loam, peat, chippings or leafmould they can bring in to replace the over-acid and invariably exhausted soil of a town garden, before they consider the rockwork. Then the ubiquitous catmint, iberis and alyssum can safely be replaced by choicer things. Rock plants like to get their roots behind rocks, but they do not grow on rocks—a singularly commonplace and obvious statement which is all too often forgotten in a welter of waterfalls and Westmorland stone!

You will observe that many of the plants I show you are growing in pots, and I do not want you to think that this is because they will not grow on the rock garden; sometimes it is because a particular plant needs protection from winter damp, and with others it is purely a matter of local environment or personal convenience. To achieve colour throughout the year, however, I think cold frames or an alpine house are almost essential, and many of these plants were grown in my alpine house where careful attention can more easily be given to watering, and where continuous Aerosol provides some protection against the various ills that plant flesh is heir to. One of my problems in preparing this lecture was to know where to begin, but the problem was answered for me on New Year's Day, when the first flowers opened on a dwarf asphodel.

Asphodelus acaulis is an unusual plant from the Atlas Mountains, with an attractive flesh-pink colour which is rare in alpines. Coming from these dry sunbaked regions its hardiness is somewhat questionable, but it has the advantage that its thick fleshy roots may be treated like a bulb, and its pot placed under the staging to dry out when the leaves begin to go brown, and it need not be watered again until growth begins in early November. The flowers are fleeting, but freely produced amongst the untidy foliage—which in its native mountains lies prostrate on the ground. Being a rather lazy person by inclination, I have a great liking for these plants which you can ignore for several months of the year, and in the same category we have the little wild cyclamen species. This surely is one of the very choicest genera for the alpine grower, for

a comparatively small number of species and varieties will ensure continuance of flower for nine months of the year. The first flowers of *C. europaeum* appear in July, and we then have *C. neapolitanum* and the dainty *C. cilicium* to carry us through to the winter months, when the various forms of *C. orbiculatum* prolong the flowering period to the springtime. Then we have perhaps the loveliest of all, *C. libanoticum*—a recent recipient of the First Class Certificate (Fig. 92)—and *C. repandum*, whilst in some years the dainty scented flowers of the wild *C. persicum* seem hardly to have faded before *C. europaeum* is in flower again.

Even wider in its scope of flowering than the genus *Cyclamen* is the great family of the saxifrages, and *Saxifraga* 'Cranbourne' is shown to you, not because of any particular merit in itself, but as a symbol of all the glorious Kabschia group which make our gardens such a delight in the very early days of the year. It is always worth while to grow some of them under glass, and thus protect their flowers from the horrors of an English March, for the first flowers will then appear in early February and last far longer than they would in the rock garden. In April the flowers of the Kabschias are almost over, but the Engleria group with its soft inflorescences of subdued colour will come into its own. Most representative of this section, and one of the choicest of all plants for the alpine house is *S. grisebachii* 'Wisley', whose flowers elongate and last almost until the encrusted or "Silver Saxifrages" come forward in May and June to claim their part of the title bestowed on them by REGINALD FARRER as "the backbone of the rock garden". Of the silvers, I would say with all honesty that I consider the lovely hybrid of *S. longifolia*, which is known as 'Tumbling Waters', to be the most beautiful open-garden rock plant which I know. It is a paragon of all the virtues: easy to propagate by detaching the side rosettes: beautiful in flower or out of flower, and even though the parent rosette dies when it flowers, could it be said that any small plant puts more effort into its flower than this lovely saxifrage? One could talk for hours about this wonderful family —about such plants as the summer-flowering *S. strigosa*, or *S. fortunei*, whose fine loose flower heads brighten the winter and last almost until the buds appear on the Kabschias. But my purpose is to speak of choice rock plants in general and we must pass on to make fleeting mention of that other great family of choice rock plants, the primulas.

One of the earliest flowering of all primulas is *Primula allionii*, from the Maritime Alps, but I know of no grower who succeeds with it in the open garden; one can keep them alive in the open, but one cannot hope to flower them to the degree of perfection attained by MR. K. R. WOOSTER and his son, to whom we owe a great debt of gratitude for the remarkable success which has attended his careful selection of seedlings over the years. The late MR. FRANK BARKER also devoted many years to the selection and hybridization of this primula, and one of his finest achievements was *P.* 'Ethel Barker', a cross between *P. allionii* and *P. rubra*, which is another charming plant best suited for cultivation under

glass. For the open garden there are the hosts of European primulas and their hybrids which make so colourful a sight in a scree bed in May, and of these we might consider one of the more unusual—*P.* ×*kellereri*, which is a natural hybrid between *P. minima* and *P. rubra*, and which is found in the neighbourhood of the Brenner Pass. It is a fine plant of unusual colour, which has cast off the shy flowering propensities of *P. minima*, and yet retained much of its characteristic shape of flower and beauty of leaf.

No consideration of choice rock plants could avoid passing mention of bulbs, and here again the pros and cons of culture under glass are weighted in favour of the alpine house, where proper attention can be given to the provision of that essential period of enforced rest and sun-baking which some of the choicer bulbous species require. This cannot be provided in the rock garden, although one often hears recommendations about "planting bulbs beneath carpeting plants" which will protect them in winter—in point of fact such carpeting plants are often fatal in that they prevent the ripening of the bulbs in summer, and harbour slugs which feed on the growing tips of the bulb in spring. One of the most beautiful bulbs of early spring was discovered in Chile by an Italian botanist and named after his daughter Tecophila—a fortunate maiden indeed to have her name perpetuated by so wonderful a flower as *Tecophilaea cyanocrocus*, yet most of us find it temperamental and difficult to flower. There are dark words whispered about it in secret places, where sometimes a mutter about sheep manure may be overheard, and there are various colour forms, such as varieties *leichtlinii* and *violacea*, which seem to me mere travesties of the ethereal blue loveliness of the true species. Easy to flower, on the other hand, is one of the most attractive of late spring bulbs, the charming little "Cat's ears" from Oregon which is burdened with the rather ponderous name of *Calochortus maweanus* var. *major*. It is a plant of the damp woodlands in Oregon, and its rarity in cultivation in this country may possibly be due to its ardent admirers trying to give it similar treatment here; the bulbs rot very easily and one of the secrets of maintaining it seems to be to start it into growth late. In this garden it is kept bone dry from July until early March, and has never failed to produce its pink flushed and bewhiskered flowers. This period of complete drought seems strangely alien to the needs of woodland plants, and yet it is appreciated equally by the so-called "hardy orchids" such as *Pleione formosana*, of which a slide of the lovely pure white form is shown (Fig. 86). A mixture of sphagnum, sand and loam suits them well, and we keep them bone dry from the time the leaves fall until the first signs of spring growth indicate that the time for copious watering has come round again.

Having mentioned three bulbous plants which require care and attention, it seems only right to mention two equally choice ones that require no attention at all. First then, a tulip. "Tulip time" conjures up within the mind of the average gardener a picture of stately rows of

glorious hybrids, and (dare one say it?) dark thoughts of ground preparation, planting, lifting, drying, storing, sorting and ultimate replanting. To the rock gardener it conjures up an entirely different picture, of small patches of vivid colour where the little wild tulips return year after year without attention, many of them flowering at a time when the bedding tulip has hardly sent a tentative green feeler above ground to sample the frosty spring air. My slide shows *Tulipa linifolia*, growing amongst the rosettes of *Saxifraga longifolia* 'Tumbling Waters'; it has been here undisturbed for seven or eight years and increases slowly each year, and the flowers of the saxifrage soon hide the failing leaves of the tulip. I like the border tulips—but can you not understand a slight feeling of prejudice in favour of these dainty wildlings of the hills?

There are so many other *Tulipa* species I would like to describe to you, such as *T. aucheriana* with its curiously coloured pinky-brown flowers that open like stars in the hot sunshine, and small dainty rock-garden forms of *T. kaufmanniana*, but I must pass on to my last bulb, which is a lily. Nearly all of us think of lilies as woodland plants, tall stately things unsuited to the rock garden—yet may I most earnestly commend to you a species from the Maritime Alps which is a rebellious creature which cares naught for woodland, but revels in a hard limy stony loam in full sunshine, and need never be disturbed. It is *Lilium pomponium*, and its vivid sealing-wax red Turk's-cap flowers make an unforgettable patch of colour in this rock garden, where its stems never exceeds 18 inches high under the soil conditions described. It flowers readily and easily from seed in three to four years, and seed is invariably offered in that masterly document, the seed list of the Alpine Garden Society.

Having made mention of "woodland plants" I well appreciate that I have touched upon a vast range of choice plants that I cannot hope to do justice to, but there is a singularly lovely and all too rarely seen plant, *Tropaeolum polyphyllum*, which seems to revel in partly shaded situations. These Tropaeolums are sun lovers, and the tender tubers should be planted at least 12 inches deep—yet in full sun we had no success with it, and moved it in despair to a peat bed under the lee of dwarf rhododendrons, where it responded by sending out its yard-long runners each July in a tumbling mass of gold through the branches of the dwarf shrubs—soon to disappear almost as suddenly as it came, and to remain hidden for another nine months of the year. Whilst on the subject of shrubs, a very lovely rhododendron, which offers both a challenge to the grower and a great reward for successful cultivation, is *R. camtschaticum*—a fearsome name denoting no more than the peninsular from which it comes. The leaves are deciduous and of a choice apple-green which blends delightfully with the more sombre hues of its evergreen neighbours, and if it can be given that most difficult of combinations, sunshine and copious moisture in summer, it is a shrub of unsurpassed beauty.

The woodlanders provide us with another essential group of choice rock plants—those which atone for their insignificant flowers in springtime, by producing the loveliest of berries in the autumn, and as an example of these I would give *Gaultheria cuneata*; its clear white clusters of fruit are possibly less lovely than the clear blue berries of *G. trichophylla*, but they are produced with more certainty, and certainly in greater quantity. There is no end to the number of choice rock-garden plants that appreciate woodland conditions, but I must nevertheless pass on to the consideration of a group of plants, that for convenience one must describe as "difficult". There was recently an occasion when a nurseryman was approached by a customer and requested to supply two replacements for "The neat little hummocks" she had purchased the previous year. She explained that they had been planted in crazy paving alongside a tennis court, and that two of them had died after being trodden on. The nurseryman well recalled the order, because he seldom had the pleasure of supplying Aretian androsaces by the dozen! There is, of course, an obvious moral to this story—there is no such thing as a difficult plant: there is only local difficulty of cultivation, for there is always someone, somewhere, who finds the most wayward plant easy, and the finest advice that was ever offered to lovers of choice rock plants is to grow only those which you find easy under your own conditions. We experience little difficulty with such plants as *Androsace helvetica* when grown in a mixture of almost 70 per cent chippings, and when protected completely from winter wet—yet there are many plants considered easier, like *Omphalodes luciliae* and the petiolarid primulas, which we have abandoned in despair. In the open garden it may be of interest to relate that we have abandoned whole genera such as *Hypericum*, *Aethionema*, *Thlaspi*, *Asperula*, *Daboecia*, *Helichrysum*, *Raoulia*, *Teucrium*, *Andromeda*, *Micromeria* for the same reason—a motley list of easily grown genera of which hardly a single species has been grown with success. The list of successes would be equally inexplicable, for such plants as *Linnaea borealis* and *Campanula excisa* often grow like weeds.

Typical of plants which cease to be difficult when the right position in the garden is found for it, is that rare British native *Cypripedium calceolus* (Fig. 85). It needs a position at the foot of some north-facing rock, where moisture will percolate down and keep it moist in summer. The soil must be well drained, and slugs kept away from the dormant crowns, when it will flourish like the proverbial Bay Tree—though one has an uneasy feeling that the Bay Tree is a much more reliable flourisher!

To go from one extreme to another, from a cool woodlander to a sub-shrub from the dry mountains of South Island of New Zealand one finds a newcomer to our gardens, *Helichrysum coralloides*. It is not so much difficult to grow as difficult to keep in good condition, and one suspects that it needs constant re-potting, and perhaps a little gentle feeding, for few of us would care to risk so rare a plant, and one

of questionable hardiness, to the open garden. One hardly dare mention feeding and alpines in the same breath within these hallowed walls, but we must remember that gentle feeding is the equivalent of re-potting in many circumstances, and the old horticultural dogma about alpines and manure dates back to the era of the horse and its by-products, and bears little relationship to the gentle chemical feeding available today. I suspect that this might be good treatment for the true *Anchusa caespitosa* (not to be confused with *A. caespitosa* of gardens which has now been tentatively named *A. angustissima*). This I find a most difficult plant to grow and yet I have heard of a garden in Kent where two enormous plants of the original seed collecting are growing happily and without protection in some crazy paving. I am certain of only two things about this plant: firstly, that it wants re-potting at least twice a year, and secondly that it would not grow in *my* crazy paving.

Some of the very choicest of rock-garden plants are found in the great Campanulaceae family, and when the botanist ORPHANIDES first descended into the lonely black gorges of the river Styx and found the tight cushions of the incomparable *Diosphaera asperuloides*, he brought back to our gardens one of the loveliest plants we can grow. The pan I am illustrating is about twenty years old, and if it can reach that age in a pan, then it cannot be difficult. The secret of growing it is to cut half an inch off the top of the plant as soon as the flowers begin to fade—this not only promotes tighter growth, but prevents the plant having to face a damp British winter with a covering of dead leaves. Of the campanulas themselves it always seems to me that *C. morettiana* has few equals, bearing its huge flowers above the tiny rosettes over a long period. Both the last two named plants must be fully protected against winter wet, as must another very lovely introduction of recent years from the Dolomites, *C. petrophila*. Here once again the only difficulty of growing the plant is that the leaves die back in winter and tend to set up decay in the rosette from which they spring. Equally choice, but infinitely easier to grow is *C. betulaefolia* from Armenia. Unmistakable from its leaves, which as the name implies, are like those of the birch, its pink-tipped buds open to pure white and give us an easy and altogether charming plant. When it received the A.M. the flowers were pink, but such a colour form has not been seen in recent years. There are a host of choice plants like this available to the rock-garden enthusiast, which seem to do better in pots than they do in the open garden. For instance, there is *Petrophytum hendersonii*, a genus akin to *Spiraea*, which grows on north faces of the Olympic Mountains of America, and which flowers far more freely in a pot than it does in the open, whilst from the neighbouring Rocky Mountains comes the very easy *Boykinia jamesii*, which is a problem only because of its shy flowering. Many a learned treatise on Alpines will tell you that it needs starvation in a pot if it is to flower. I once heard a very good plantsman remark that if one achieves no success with a plant by obeying the accepted rules, it was a good plan to do the exact opposite. ***Boykinia jamesii*** certainly needs to have its roots

confined, but it was not until I planted it in cow manure that it started flowering—and it has flowered ever since.

Some of the very loveliest of recent plant introductions have been collected by PETER DAVIS in Asia Minor, and it is a matter of great regret that they do not become more firmly established in cultivation. *Verbascum dumulosum*, fortunately, seems to have become popular, though many of these introductions seem doubtfully hardy—at any rate in this bleak Midland garden. Both *V. dumulosum* and its close relative *V. pestalozzae* have the same delightful vivid yellow flowers, and the same soft felty leaves, but the flower stems of *V. pestalozzae* radiate from the base of an upright-growing rosette of leaves. Infinitely lovelier, however, is one of the finest of all the PETER DAVIS introductions, *Origanum amanum* (Fig. 83), which is neither easy to grow nor easy to acquire. Like all its race, and indeed, like a considerable number of choice rock plants, this *Origanum* does best if it is cut back severely after flowering—and it flowers unceasingly from June until September. One cannot blame nurserymen if they tend to stock the old and tried favourites rather than these unknown and untried new introductions, for the fault lies more with our own conservatism, and whilst on the subject of the conservatism of the average gardener, may I suggest that we make a point each year of choosing seed of a plant we do not know? This sort of horticultural "lucky dip" provided me last year with seed from New Zealand, listed as *Podolepis* sp. (probably *P. canescens*); I had never even heard of *Podolepis*, and it supplied me with one of the most colourful plants for August in the whole garden. It might equally well produce such interesting curiosities as *Saussurea stella*—if you like curiosities; a strange monocarpic species which looks as if it came from under the sea and might well be expected to have a lethal sting. Yet to watch the tall upright grassy green foliage gradually become prostrate, broaden at the base, and change colour to purple as the flower cluster is forced up from the base is a phenomenon which cannot fail to fascinate the plant lover. I would also strongly recommend trying the less-known species of well-known genera; we most of us grow *Cytisus kewensis* and *C. procumbens*, yet all too seldom does one see that charming prostrate broom, *C. hirsutus demissus*, wandering across the scree and bearing its huge flowers like yellow butterflies on a carpet of green—it comes from Mount Olympus in Greece, and is always tidy and attractive.

I could not close a talk on choice rock plants without mentioning one which affords me more pleasure in the alpine house than perhaps any other: *Phlox nana* var. *ensifolia* (syn. *P. mesoleuca*) (Fig. 84). I know of no plant which has the ability to flower so freely over so long a period, nor do I know of one which so strains a gardener's patience. It is at present rather difficult to acquire—probably because it comes from root cuttings, and, like most of us, resents having its roots disturbed. There was a time when I thought the best way to keep it compact was to layer the straggly stems, but I am beginning to think it is better to be drastic with it, and to prune it like a vine to within an eye or so of the previous

year's growth. This again is a plant which does not do too well in the open garden, but which is superb in a pot. Having shown you a plant which is somewhat difficult to acquire, I shall now infuriate some of my audience by concluding with three really choice rock plants which—to the best of my knowledge—are now impossible to acquire; least of all can I supply them myself, and I fear that a grave burden of responsibility rests with us gardeners that we should allow such lovely plants as these to be lost. The first is a crucifer of PETER DAVIS's collecting, *Ricotia davisiae*, which flowers so profusely that it appears to flower itself to death. The second is a form of the Edelweiss collected by MR. WALTER INGWERSEN in Bulgaria before the war, *Leontopodium alpinum* var. *crassense*, dwarfer and with larger and whiter flowers than the type, but with the well-known propensity of the type plant for rotting at the collar during the winter. Thirdly, and lastly, another PETER DAVIS introduction which I grew for many years, and possessed up to the present winter, yet failed completely to propagate either from cuttings or seed. It is *Linum olympicum*, with pure white flowers the size of half-crowns, spread along the trailing stems. I think it is also one of the loveliest plants that I have ever grown. I hope that I may have been able to show and describe to you a few choice rock plants which you will soon try for yourselves, and I hope your success will be greater than mine, even if the pleasure you derive from growing them cannot exceed the pleasure they afford me.

THE FIFTEENTH INTERNATIONAL HORTICULTURAL CONGRESS

THIS Congress was held in Nice, on the French Mediterranean coast, from April 11 to 18 of this year. The general lectures, symposia and sectional papers dealt for the most part with plant breeding, growth substances, virus diseases, use of plastic substances and with recent developments in horticultural research and technique, and for their details we must await the full published report of the Congress.

The resolutions included one for the establishment of an International Society for Horticultural Science and an offer was accepted for the headquarters to be in Holland. This Society will in future be responsible for International Horticultural Congresses and will establish several Commissions which will bring together small groups of experts with specialized interests. Further details of this Society will be available next year. The final plenary Session also accepted unanimously an invitation from Belgium to hold the next International Horticultural Congress in that country in 1962.

In plant-breeding the value of heterosis for horticultural crops was very strongly stressed and this was defined as a "case in which the hybrid gives a yield greater than that of either parent". Sometimes

the yield of the hybrid exceeds that of the parents by 50–100 per cent. The case of onions in which there is much male sterility was cited. PROF. N. V. TSITSINE, the Director of the Moscow Botanic Garden, in an interesting lecture spoke about hybridization in the U.S.S.R. and told us about some of the crosses of wild species with domesticated plants which have been made to extend the range of fruit and cereal crops into Siberia and Central Asia. He also discussed the hybrids between the apple and pear which have been raised in Russia extensively as well as in England. He said these gave good fruit, rather resembling a pear, at twelve years old. He looked forward to hybridization of a wide range between different genera.

Growth substances, in particular Gibberellic acid, were the subject of several communications and we listened to a masterly summing up of this subject by PROF. S. J. WELLENSIEK of Holland. It was clear that the effects varied very considerably with different plants and in short-day flowering plants, such as *Chrysanthemum*, the Gibberellic acid could not replace the effect of a short day in flower formation but it could in some cases replace the action of long days or low temperatures. The oddest case he quoted concerned ivy, where Gibberellic acid caused great elongation coupled with a reversion to the juvenile stage. He concluded that at present no general theory of flowering can be formulated ; each plant is a separate case and as many individual cases as possible should be studied.

In another section the question of weed control in nurseries was discussed. A great deal of work is being done on chemical herbicides which kill the seedling weed at time of germination. These residual herbicides have been experimented with among many different crops of both woody and herbaceous plants and it now seems safe to say that herbicides do exist which can be used successfully in a mixed shrubbery or herbaceous border. The factor of chief importance is the time of application, certain herbicides being confined to the dormant period, whilst others may be used during the growing time. It is also vital to use a sprayer which can ensure an even pressure, giving a prescribed amount of spray to a given area in a given time.

The use of various plastics for greenhouse construction was discussed in a symposium at which it seemed necessary to contrast the much shorter life, sometimes as low as two years, with the lower costs as compared to glass. It was recommended by one speaker that in the case of structures of the Dutch light type the plastic wall should be made sloping as well as the roofs. Some French experiments with plastic pots showed increased growth with a number of plants and suggest that further experiments along these lines would be desirable and that possibly in this connection some widespread ideas on pots may need revision. It was suggested that the temperature in the plastic pots was 1–4° higher than in ordinary pots.

DR. R. J. SEIBERT of the Longwood Foundation read, on behalf of PROF. H. B. TUKEY, an account of the activities of the comparatively

newly formed American Horticultural Council. Among these was an important registration and testing programme for woody plants to be carried out by botanic gardens; a new pocket-size horticultural colour fan; a map of plant hardiness zones for the U.S.A., and a directory of horticulturists and horticultural organizations, which would be revised every two years. They also held an annual Congress. The present headquarters are at the Arnold Arboretum. DR. R. H. HOWARD of the Arnold Arboretum discussed the value of cross sections of the vascular structure of the petiole as a help in generic identification and stated that at the Arnold Arboretum data on vascular patterns for families and genera are tabulated on cards for verification of sterile material, seedling material, possible relationships or hybridity of the unknown plant and that this method has been found fast, reliable and useful. It was particularly useful for the identification of bigeneric hybrids. Attention was also drawn by DR. HOWARD, speaking on behalf of DR. KOBUSKI, to the importance of preserving specimens of horticultural plants, particularly in the case of woody hybrids. Accurate colour notes and, if possible, a colour slide should be added where possible. Some beautiful pictures of plants from the Rocky Mountain zones were shown by MR. M. W. PESMAN and he emphasized their value for horticultural use in other parts of the world, particularly those of the subalpine zone.

The question of watering and irrigation was discussed by several speakers and obviously there are still many problems unsolved. PROF. J. P. HUDSON of the University of Nottingham read a paper on the characteristics of trickle irrigation, which is becoming especially popular in Great Britain for tomatoes under glass, while other speakers discussed the various techniques of mist propagation and devices for controlling it.

The fruit sessions were considered by many participants as disappointing. The papers given by the staff of Long Ashton Research Station and also, in the Horticultural Climatology section (related to fruit growing), by the staff of East Malling Research Station however, aroused interest, some of them being models of what congress papers should be. Most aspects of fruit growing were covered, many papers being given by representatives of countries where research programmes are a comparatively new thing. But the only papers which really added much to our knowledge were those on plant nutrition and, to a lesser extent, on virus diseases.

The International Committee on Horticultural Nomenclature and Registration held two meetings during the Congress under the Chairmanship of MR. J. S. L. GILMOUR and recommended to the Congress the adoption of the 1958 edition of the *International Code for the Nomenclature of Cultivated Plants*,* although it was recognized that some details of phrasing still required revision. There was considerable interest in the appointment of International Registration Authorities for the names of cultivated plants and some discussion on their duties. It was realized that each group of plants presented slightly different problems.

* Obtainable from the R.H.S. Offices, price 2*s.* 6*d.* post free.

Some registration authorities wished to embark on the testing, detailed description and evaluation of new cultivars in their group. While the value of this was recognized the Committee confirmed the view that "acceptance of a name for registration does not imply judgment on the distinctness of the cultivar from others and that registration is independent of testing".

In addition to the registration of *Narcissus* and *Rhododendron* cultivars, which it undertook previously, The Royal Horticultural Society offered at this Congress to undertake the registration of cultivars of *Lilium* and this was accepted. The following International Registration Authorities have now been appointed and anyone raising a new variety in one of these groups and wishing to name it should communicate with the respective authority giving the name he suggests:

Koninklijke Algemene Vereniging voor Bloembollencultuur (Royal General Dutch Bulb Growers' Society), 45, Wilhelminastraat, Haarlem, Holland.	*Tulipa*; hardy bulbous and tuberous-rooted plants (excluding *Dahlia*, *Gladiolus*, *Lilium* and *Narcissus*).
American Horticultural Council, Arnold Arboretum, Jamaica Plain 30, Mass., U.S.A. (acting on behalf of the following specialist societies):	
The American Iris Society.	*Iris* (excluding bulbous irises).
The Holly Society of America.	*Ilex*.
The American Rose Society.	*Rosa*.
The Hemerocallis Society of America.	*Hemerocallis*.
The American Gesneria Society.	Gesneriaceae (excluding *Saintpaulia*).
The Royal Horticultural Society, Vincent Square, London, S.W.1, England.	*Narcissus*; *Rhododendron* (including *Azalea*); *Delphinium* (perennials only); *Lilium*.
The National Chrysanthemum Society, 83, Chesterfield Road, Barnet, Herts., England.	*Chrysanthemum* (perennials only).
Laboratorium voor Tuinbouwplantenteelt, Wageningen, Netherlands.	*Cyclamen*.
Herrenhausen Institut für Zierpflanzen, Hannover-Herrenhausen, Germany.	*Callistephus*.
La Société Nationale d'Horticulture de France, 84, Rue de Grenelle, Paris, 7.	*Matthiola; Dianthus; Acacia; Hydrangea*.
Royal New Zealand Institute of Horticulture, P.O. Box 1368, Wellington, New Zealand.	*Hebe; Leptospermum*.

In addition the final plenary session of the Congress at the suggestion of the International Committee for Horticultural Nomenclature passed unanimously the following resolution:

> "The XVth International Horticultural Congress assembled at Nice, being convinced that the stability of the specific names of cultivated plants is of the highest importance for the progress of both applied and pure botany, and being gravely disturbed by the continued changes in the specific names of widely grown horticultural plants, urges the IXth International Botanical Congress, due to meet in Montreal in 1959, to make any appropriate emendations to the International Code for Botanical Nomenclature that will reduce to a minimum the changing of such names for nomenclatural reasons in the future."

The excursions to gardens and plant breeding establishments were of particular interest and were enjoyed by many. To those of us who like to grow a few of the newer hybrid Tea or Floribunda roses the visit to the Meilland establishment showed the stages in the selection of new varieties. The majority of the work was under glass and the seedlings were grown in soilless matrices irrigated with nutrient solutions. It was interesting to see young seedlings flowering well within the first year when the preliminary selection is made. A large number are also grown under glass for the cut-flower trade and we were able to see some unusually fine blooms on long stems of newer varieties.

Among the gardens the botanical collections of the Villa Les Cèdres, belonging to M. J. MARNIER-LAPOSTOLLE at Cap Ferrat, were outstanding. Here were great collections of cacti and succulents arranged largely in their botanical genera and growing with great vigour. Two very large plastic houses were used to give protection to the more tender plants. It is doubtful whether this collection can be surpassed for completeness anywhere in Europe. There were also grown large collections of *Acacia* (over 70 species), and *Araliaceae*. It was very surprising to see so many tender plants outside. Many of the trees were covered with epiphytes such as tillandsias, bromeliads of varying kinds and epiphytic ferns such as *Platycerium*, while tree ferns and cycads of several species also flourished. Parts of the garden thus showed a tropical effect of the kind we usually associate with a stove house in this country. There were groups of cymbidiums outside while in the summer there are tropical blue water lilies, the great leaves and flowers of *Victoria cruziana* (*V. regia*) and lotuses (*Nelumbo nucifera*) in a large pool. The bright yellow-stemmed bamboo *Phyllostachys sulphurea* made a grove 35 feet high, while the unusual and almost black-stemmed *P. nigra* was growing well. Particularly beautiful also were the mixed borders of sparaxis and freesias flowering very freely.

The gardens of the Villa Leonina (M. A. PLESCH) were also of great interest for the number of tender plants of economic interest grown against the walls of the narrow terraces. There was also a *Ficus macrophylla*,

probably 65 feet high by 80 feet across and claimed to be the largest in Europe. It was said to be only 70 to 80 years old; numerous aerial roots had descended and rooted all round the stem. Here also were enormous specimens of the Norfolk Island pine *Araucaria excelsa*, estimated at 85 feet, and of the palm *Chamaerops humilis*, spreading widely over 30 feet or more. M. PLESCH also staged a large exhibition of books and botanical and other pictures from his magnificent library. Particularly notable were a number of original drawings by G. EHRET, on vellum, and many members of the Congress visited and enjoyed this beautifully arranged exhibition, which included a number of very rare books and exceptionally fine copies.

The gardens of Villa Roquebrune (MRS. G. WARRE) were of particular beauty, terraced and sloping down to the sea and were an unusually happy combination of succulents, white arums, geraniums, echiums and free-flowering composites such as Venidio-Arctotis hybrids, gazanias and the spectacular white *Dimorphotheca ecklonis* with unusual trees and shrubs. The climbing roses such as 'Ramona', 'Senator Amic', *R. laevigata* and several other more unusual hybrids of *R. gigantea* were in full flower. The gigantic shrubby *Echium fastuosum* stood out with its bright blue candles and grey foliage against the paler blue of the Mediterranean. A particular feature of the garden also was the sweet scent as one went round from masses of *Jasminum polyanthum* growing over old trees. It is curious that when grown in the open the buds of this lovely jasmine, introduced by GEORGE FORREST from Yunnan, are deep reddish-maroon while under glass in England they are only pale pink. The scent of *Holboellia latifolia* (*Stauntonia latifolia*) in full flower covering a veranda was unusually strong and intertwined with it were the dark blue flowers of a *Kennedya* from Australia. Two other features of the garden were a magnificent tree of *Loropetalum chinense* covered with creamy flowers and a fine tree of the grey weeping *Cupressus cashmeriana*. The gardens of MISS M. CAMPBELL at Casa Rossa, Menton, were of particular interest to those keen on citrus fruits and many fellows will remember her interesting Gold Medal exhibit of these at a recent show, while the wonderful collection of cacti and other succulent plants growing on the rocky cliff of the Jardin Exotique at Monte Carlo excited not only enthusiasts for these plants. It is in such a natural setting that succulent plants look most effective.

Then there was the magnificent Arboretum at the Jardin Thuret, (Station de Botanique et de Phytopathologie, Villa Thuret, Boulevard du Cap-Antibes (A.M.)). This garden was very well planned, all the subjects being given sufficient space for full development, and contained giant specimens of the following much larger than any usually seen: *Acacia dealbata* var. *pendula*, *Arbutus andrachne*, *A. glandulosa*, *Cupressus guadalupensis*, *Eucalyptus sideroxylon*, *Juniperus drupacea*, *Pinus canariensis*, *P. longifolia*, *Pittosporum daphniphylloides*, *Raphiolepis indica*, *Sophora secundiflora*.

THE COSTARD APPLE

H. V. Taylor, C.B.E., D.Sc., A.R.C.S., V.M.H.
(Chairman of The Royal Horticultural Society's Fruit Group)

An interesting exhibit on the Fruit Group Table on December 4, 1957, was a plate of five apples by MISS N. POPE of Moreton, The Crescent, Earley, Reading, for the card read, "variety 'The Costard' ". The appearance of this exhibit was surprising since many members of the Fruit Group had thought the Costard apple to have disappeared from cultivation. MISS POPE explains, "In the 1890's the Great Grandmother of the Costard tree I possess stood in a small grass orchard at Highclere, Hants. It was a big old tree, with great wide spreading limbs branching out from a 3-foot-high bole.

"Its age? Well, some 40-year-old trees with which I am acquainted are still comparative striplings, so I think 80 to 100 years would be a reasonable estimate of its age when I first knew it. It was a healthy old tree and very popular with us youngsters, giving regular crops of big red apples and room for a whole family to sit on the big wide branches. We called it the 'Red apple'.

"It would be about 1890 that one of my Father's oldest friends—MR. CHARLES ROSS—became interested in it. He took scions and planted a tree at Welford Park, Berks, and he labelled this tree 'Gloucestershire Costard' with a metal label. I have seen this tree as late as 1918 with the label still in position and the tree bearing good crops.

"My brother had happy memories also of this old tree and in 1920 he took grafts from Welford Park and planted thirty trees at Wokingham. These grew too well and smothered other trees and had to be grubbed. I took grafts from his trees and worked several trees, one of which bore the apples in the exhibit on the Fruit Group Table."

MISS POPE'S apples were about 3 inches × 3 inches in size, definitely conical in shape and with a slight waist near the apex. One side of the apples was smaller than the other so that all the apples leant at an angle. The ribs were not very conspicuous. In colour the apples were yellow to orange on one side and carrying a scarlet flush and scarlet broken stripes on the sunny side, i.e. bright red apples. The skin was dry—not greasy—rough to the touch, for it carried numerous grey russet dots, the russet was abundant on the base and on the sides of the stem cavity. The stem was ¼ inch. Each apple contained four good seeds only—the others were empty.

The flesh was primrose to yellow, firm, moderately juicy and ready for eating at Christmas. It had a good flavour and could be enjoyed as dessert, though probably they were dual-purpose apples.

The question now arises as to whether they are of the variety 'The Costard' and to get the answer an examination of the old records had to be made. In 1629 JOHN PARKINSON published a large book, *Paradisi in*

Sole; Paradisus Terrestris, which contained a good deal of information on the fruits and plants of the time. The paragraph on apples says, "The ſorts of Apples are ſo many, and infinite almoſt as I may ſay, that I cannot giue you the names of all. . . . The gray Coſterd is a good great apple, ſomewhat whitiſh on the outſide, and abideth the winter. The greene Coſterd is like the other, but greener on the outſide continually."

Of course, by 1629 the Costard would be over 300 years old so it is not surprising to hear there were two kinds—a Grey Costard and a Green Costard, and one was like the other but for the difference in colour. Perhaps one was a sport from the other; yet we still do not know whether the grey or the green was the original.

In 1686 LEONARD MEAGER gives in *The English Garden* a list of 79 varieties of apples among which are included "The White Costard" and "The Red Costard", so it would seem that another sport has appeared though surprisingly he makes no mention of the Green Costard. Books published in the period 1700–1800 make little or no mention of the Costard, so by then its popularity would seem to have declined.

The publications of the nineteenth century give more information, however. In the *Transactions of the Horticultural Society of London*, vol. iii, 1820, p. 327, there is a list of kitchen apples that had been exhibited at meetings of the Society during the season, and the list includes Royal Costard and the Catshead (often confused with the Costard).

The Royal Costard was said to be an apple of the largest size, flesh not very firm but being juicy and melting is an excellent sauce apple.

In 1842 the Society published a catalogue of the fruits cultivated in the gardens of the Society at Chiswick and again both Catshead and Costard are included. The Costard was classed as a very large kitchen apple of first-rate quality.

In the Report of the Committee of the National Apple Congress, held in the Royal Horticultural Society's Gardens from October 5 to October 25, 1883, the Costard is described as: ". . . very large, oblong, green, soft and a fine culinary apple", and that is the latest description known of the Green Costard.

Finally, there is the important works of ROBERT HOGG to be considered and it must be remembered that he was the foremost pomological writer of the middle and late nineteenth century.

In 1851 HOGG published *British Pomology* and gave a technical description of the Costard: "Fruits about 3 inches × 3¼ inches, having five prominent ribs and distinctly five-sided. Skin dull yellowish green, strewed all over with embedded grey streaks. Flesh white, tender, juicy. An excellent culinary apple in season at Christmas."

ROBERT HOGG was also Technical Editor of the *Herefordshire Pomona*, published by the Woolhope Field Club in 1879. By this time the prevailing views on the Costard had changed, for the *Herefordshire Pomona* records: "The five-ribbed and five-sided green apple, often seen as The Costard, is in fact the Catshead. There are, however, two distinct

Costards still available—(1) The Gloucestershire Costard and (2) The Herefordshire Costard."

The Gloucestershire Costard was said to be prominently ribbed and similar to the old Green Costard, except that in colour it was yellow on the one side and scarlet on the side exposed to the sun. Flesh white, sub-acid and excellent for culinary purposes.

The Herefordshire Costard, said to be grown in only a few gardens in Herefordshire, was quite different to the Gloucestershire Costard. The illustration in the *Herefordshire Pomona* shows it to be a good-shaped apple with no prominent ribs. It had a yellow stem with much scarlet over at least half of the fruit. The flesh was yellow, tender, sweet and of such good flavour that it could be used as a dessert apple.

DISCUSSION

From all this evidence it is clear that over the period there were at least four Costards recognized by pomological writers:

(1) The Green Costard, (2) The Grey Costard, (3) The Red Costard (called Gloucestershire Costard in the *Herefordshire Pomona*) and (4) The Herefordshire Costard.

Now a word about each of these:

(1) The Green Costard (*syn.* Royal Costard)

Mentioned by PARKINSON (1629). Trees were growing in The Royal Horticultural Society's Gardens at Chiswick, in 1842, and finally described by R. HOGG (1851) and by the Committee of the National Apple Congress in 1883.

(2) The Grey Costard

Apart from colour, identical to the green. Mentioned by PARKINSON (1629) and by MEAGER (1688), who called it White Costard. Not mentioned afterwards.

(3) The Red Costard

Apart from colour, similar in every way to the Green. First mentioned by MEAGER (1688). Described and illustrated in colour in the *Herefordshire Pomona*, 1879—though here called the Gloucestershire Costard.

The Green, Grey and Red Costard were white flesh sub-acid cooking apples, irregularly shaped, prominently ribbed with one side smaller than the other, so that the apples leant at an angle. Short stem with russet on the base, few fertile seeds only. Season December.

(4) The Herefordshire Costard

This is an apple of good shape, conical, with no prominent ribs—but has many Costard characteristics—one side smaller than the other and short stem with russet on the base. The colour was similar to that of the Red Costard.

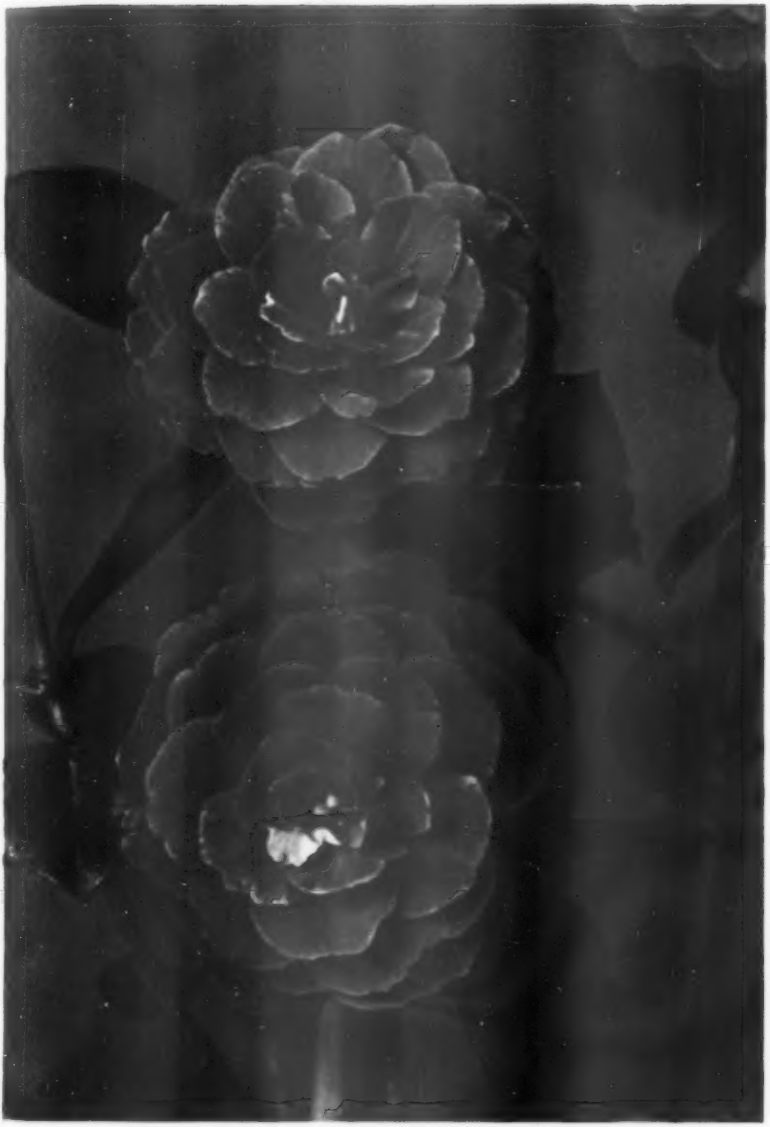

Photo: J. E. Downward

FIG. 80—*Camellia reticulata* 'Sungtzelin'. One of the fine forms of *C. reticulata* from Yunnan and bearing close resemblance to *C. reticulata floripleno*. Shown by Mrs. B. L. Urquhart on 4 March

Photo: J. E. Downward

FIG. 81—*Camellia* 'Leonard Messel'. A.M. 29 April 1958. A hybrid from *C. reticulata* × *C. williamsii* 'Mary Christian'. Shown by Mrs. L. C. R. Messel and the National Trust, Nymans Gardens, Handcross, Sussex (see p. 305)

Photo: J. E. Downward

FIG. 82—*Rhododendron quinquefolium*. A.M. 29 April 1958. Shown by Mr. E. de Rothschild, Exbury, near Southampton (see p. 306)

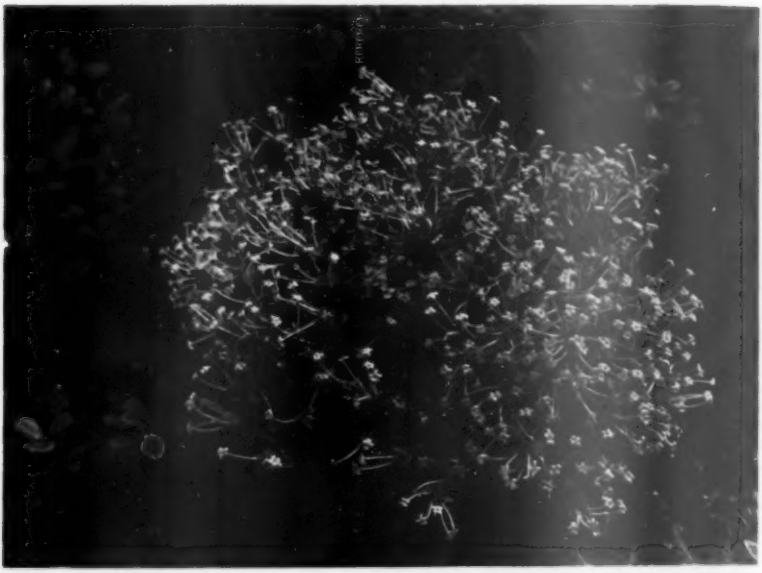

FIG. 83—*Origanum amanum*. A fine species introduced by Dr. Peter Davis (see p. 285)

FIG. 84—*Phlox nana* var. *ensifolia* (see p. 285)

FIG. 85—*Cypripedium calceolus* (see p. 283)

FIG. 86—*Pleione formosana* var. *alba* (see p. 281)

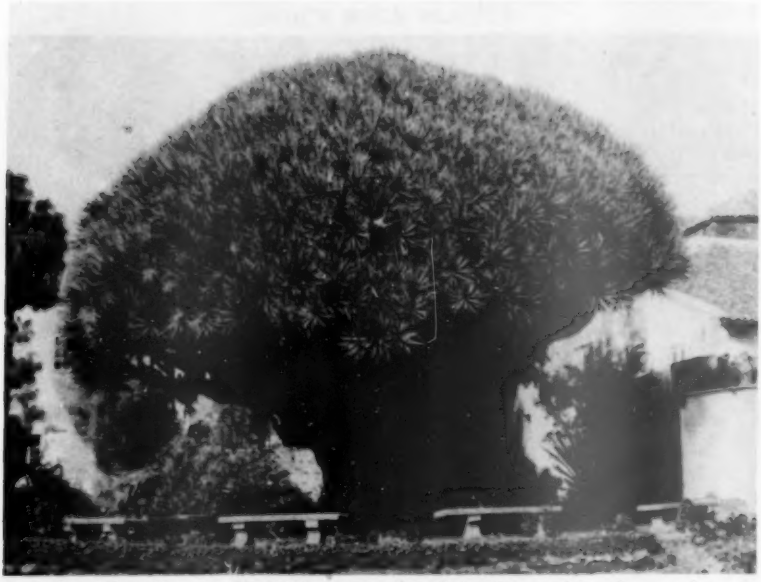

FIG. 87—The Dragon Tree (*Dracaena draco*) in the garden of a seminary at La Laguna, Teneriffe (see p. 299)

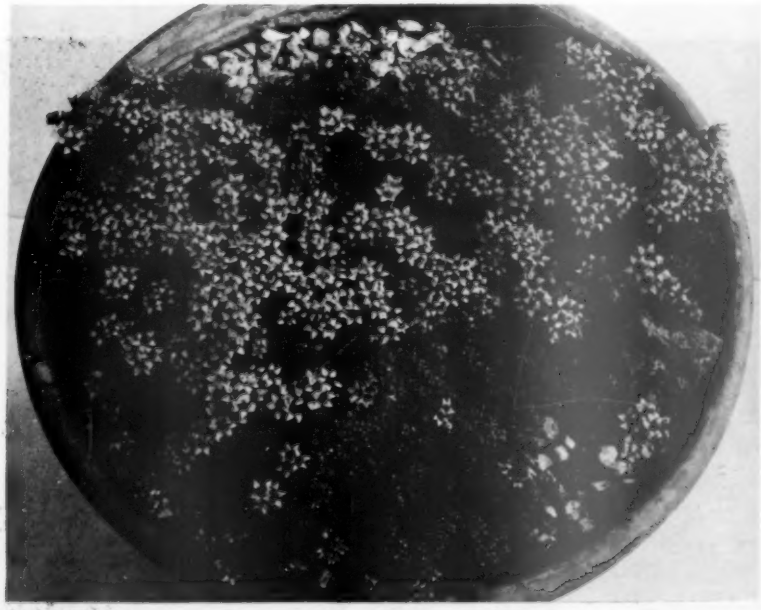

Photo: T. C. Clare

FIG. 88—*Saxifraga retusa*. A.M. 9 April 1958. Shown by Mrs. W. Duncan of Newlands, Dumfries, at the meeting of the Joint Rock Garden Committee at Dumfries (see p. 306)

FIG. 89—*Tecomanthe dendrophila* flowering in Schomburgk Range, Botanic Garden, Adelaide—showing the trusses of long tubular flowers and trifoliate leaves (see p. 296)

Photo: J. E. Downward

FIG. 90—Gladiolus 'Sybil'. A.M. 18 March 1958. Shown by T. T. Barnard Esq. on 18 March (see p. 306)

Photo: J. E. Downward

FIG. 91—Gladiolus 'Gillian'. A.M. 18 March 1958. Shown by T. T. Barnard Esq. on 18 March (see p. 305)

Photo: J. E. Downward

FIG. 92—*Cyclamen libanoticum*. F.C.C. 18 February 1958. The pan shown was awarded the Farrer Memorial Medal at the Alpine Garden Society Show. Shown by Mrs. F. H. Herrmann of 4 North Square, London, N.W.11 (see p. 305)

The flesh was *yellow* and of such good flavour that, according to the *Herefordshire Pomona*, it was enjoyed as a dessert apple.

The apples exhibited by MISS POPE were quite unlike the Green or the Grey Costards of PARKINSON'S time (1629). In shape and flesh colour they differed from the Red Costard of MEAGER (1686) and from the Gloucestershire Costard of the *Herefordshire Pomona*, 1879/85. They were identical, however, in shape, skin colour, flesh colour, skin quality, stem length, with the Herefordshire Costard of HOGG and were exactly similar to the coloured illustration of this apple in the *Herefordshire Pomona*. It was said that the Herefordshire Costard had a yellow flesh of such good quality that it could be used as dessert, a description that applies equally well to MISS POPE'S apples. In fact, it seems that MISS POPE'S apples are similar in every way to those apples described and illustrated in the *Herefordshire Pomona* as the "Herefordshire Costard". Almost simultaneously with the issue of the *Herefordshire Pomona*, ROBERT HOGG issued the 5th edition of his well-known Fruit Manual and generally he repeats the same story, "The Green Costard has disappeared but the Red Costards are still grown—the Gloucestershire Costard and the Herefordshire Costard". Exceptionally, however, he records the Gloucestershire Costard as having a yellow flesh and good to eat, whilst the Herefordshire Costard has a white flesh and is a sub-acid cooker. This causes confusion.

It is known that the members of the Woolhope Field Club, with HOGG as Technical Editor, took great pains to secure genuine specimens and accurate descriptions for the *Herefordshire Pomona*, so it may well be that a mistake was made in transcribing the descriptions of these in the Fruit Manual. This is unfortunate, as confusion between the Gloucestershire Costard and the Herefordshire Costard remains.

Finally, I am indebted to the Librarian of the Lindley Library for his help and co-operation in finding the old pomological books that made this investigation possible.

TECOMANTHE DENDROPHILA

T. R. N. Lothian

(*Director, Botanic Garden, Adelaide, Southern Australia*)

AN interesting note on *Tecomanthe speciosa* (R.H.S. JOURNAL, October 1957, J. A. HUNTER) describes the extremely rare and recent addition to the New Zealand flora.

In 1951, MR. J. S. WOMERSLEY, then Forest Botanist, now Chief of the Division of Plant Industry, Lae, New Guinea, forwarded to our garden defoliated cuttings of a bignoniaceous creeper. These had been collected from plants in the highlands area of New Guinea, and after being treated

in "Hortomone A" for 24 hours were sent airmail to Adelaide. During the next few months these cuttings were carefully tended in our propagating department. Unfortunately, while all the cuttings callused, none of them produced roots, and ultimately they collapsed.

In July 1952, a further supply of cuttings was obtained from plants which were then being cultivated in Lae. Several of these cuttings rooted, and were grown on in our propagating pit (minimum 65° F.), and ultimately placed in one of our heated glass houses. It was about this time that we learnt that the climber had been determined as *Tecomanthe dendrophila*.

The plants grew vigorously, although during the winter months it was noted that the growths near the glass not only ceased growing, but the leaves developed a decided purplish-brown tinge. However, despite this effect from cold, the foliage did not drop. During the spring months in 1955 flower buds started to appear, principally on the old wood, i.e. at least 12 months old. These buds grew rapidly, and during October 1955 developed into bunches of spectacular flowers (Fig. 89).

It has been noted elsewhere that flowers are produced not only on old wood up to several years old, but sometimes on leafy shoots. Although our plants are now six years old, this latter character has not yet been noted.

The flowers are tubular in shape, up to 3 inches long, ¾ inch to 1 inch in diameter, with up to ten flowers per raceme or truss. These are pendulous and the flowers themselves are brilliantly coloured. The tube is a rich fiery orange-red, and the mouth of the tube a clear deep yellow. These brilliant flowers are set off by deep green foliage, the whole making a spectacular display.

Since the plant first flowered in October–November 1955, it has flowered each year. Most certainly, even under our somewhat mild winter conditions in Adelaide these plants require a heated glass-house in the winter, without which the plant stops growing and the young growths die back to "hard wood".

Our plants are now well established (plants were forwarded to R.H.S. Gardens, Wisley, and Royal Botanic Gardens, Kew, last year), and continue to grow rapidly. The shoots are slender and long, indicating as VAN STEENIS* points out, "(genus) is tall, rarely low climbers". Unlike the New Zealand species, *T. speciosa*, the glabrous foliage of the New Guinea plant is not only trifoliate (the New Zealand species has from five to eleven leaflets), but the leaflets are very much thinner in texture, and more acute.

Although our plant has flowered three times, no capsule has been produced. However, it is hoped that our pollinations this year may be more successful.

This species, according to VAN STEENIS, appears to be limited to New Guinea and Papua, but from widely scattered localities. Further, its distribution extends from the mountains right down to sea-level,

* *Bulletin de Jardin Buitenzorg*, Serie III, Vol. X (1928), p. 206.

although again in this latter habitat confining itself to dense jungle along streams.

The plant propagates readily from cuttings of mature wood, of three nodes. These cuttings are placed in bottom heat in a compost of equal parts of peat moss and coarse washed sand. Optimum temperatures for rooting the cuttings appear to be between 75 and 80° F.

An open sandy compost well supplied with organic matter (peat moss) produces vigorous growth. Following the rooting of the cuttings, initial potting into a 4-inch or 5-inch pot, then into a 7-inch and finally into a 9-inch, has been made. Although our plant was placed in a 9-inch pot two years ago, it shows no sign of ceasing to grow, and it would appear that so long as some top dressing is carried out annually, similar plants could remain in this size of pot for a number of years.

NOTE FROM A FELLOW

Erythronium americanum

E. americanum is such a charming species that I think information how to grow it successfully is worth recording. In my paper, "The Genus Erythronium", read before The Lily Group, I referred to the difficulty in making it flower here and also that it is not always free-flowering in its natural habitat.

Since then I have received a most informative letter from a lady living in Westchester County, New York, where it is quite common. From this I quote the following:

"1. It grows in *wet* woods not dry.
2. Its corms are anywhere from 4 to 10 inches deep in a natural state.
3. It is a *shy bloomer* in *dry* areas where the ground may have been drained, but a *heavy bloomer* where well established in a *wet* area. There are always many young ones coming along as it is a heavy producer of young.
4. The leaves are rather broad, up to 3 inches wide and are heavily mottled with brown when young. The brown fades out somewhat later.
5. There are occasionally two flowers on a stalk and buds and flowers have an orange tinge on their back.

They do take a while to establish themselves in a wild garden but will increase and bloom if the soil is damp enough."

And from a correspondent at Anderson, Indiana, U.S.A.: "Another familiar one is the *Erythronium americanum* which belongs to the N.E. and S.E. states. This variety is also to be found in the extreme southern part of Indiana growing in swampy acid soil—along with rattle-snakes."

E. B. ANDERSON

West Porlock
Somerset

THE BOTANICAL GARDEN OF OROTAVA, TENERIFFE

R. Wright

THE Canary Islands enjoy a warm and equable climate all the year round and, consequently, apart from a very low rainfall, are ideal for the cultivation of a wide variety of plants, including tropical and sub-tropical species. This fact appears to have been appreciated as early as 1788 for, in that year, by Royal Order of KING CHARLES III of Spain, a Botanical Garden was founded at Orotava, near the north coast of the island of Teneriffe.

It was the MARQUIS DE VILLANUEVA DEL PRADO who implemented the King's Order and who became the Garden's first Director, holding this office until his death in 1832. During this period almost all expenses incurred were borne by the MARQUIS himself because KING CHARLES failed to make any provision for the Garden from the Royal purse.

In the first year the seeds of exotic plants specially shipped to the island were sown and in 1790 it is recorded that the MARQUIS petitioned the "Most noble Council of Gentlemen Owners of the Water of La Orotava" to accede to his request for a free supply of water for the garden. The request was granted and thereafter an adequate supply of water ensured.

Originally the Botanical Garden was intended to accommodate plant species collected by Spanish explorers and navigators mainly from the New World. Apparently the Royal Gardens at Madrid had previously been tried for this purpose but the Spanish winter had proved too cold for the delicate species imported.

Today the Botanical Garden of Orotava extends to about 5 acres and is rectangular in shape. It is laid out formally with parallel paths crossing at right angles. There are three pools and a small glasshouse. The Garden is devoted mainly to the cultivation of trees and shrubs and there is a comprehensive collection of tropical and sub-tropical species. There is also a group of cactus and succulent plants. Some of the trees are very tall and the luxuriant growth of the dwarfer kinds presents a rather crowded and overgrown appearance.

Palms representing a considerable number of genera are conspicuous in the Garden. Interesting and beautiful specimens include the Canary Islands palm (*Phoenix canariensis*), which is closely related to the date palm (*P. dactylifera*), also found in the Garden. Two other particularly beautiful palms are the Elegant palm (*Archontophoenix cunninghamiana*) and the Royal palm (*Roystonea regia*, syn. *Oreodoxa regia*). Other palm genera of which there are special collections are *Areca*, *Chamaerops*, *Washingtonia* and there is also a collection of *Cycas*.

Trees and shrubs with brightly coloured foliage are a noteworthy feature of the Botanical Garden. *Acalyphas*, for instance, with brilliant reddish coloured leaves have been freely used as ornamental hedges to line the main pathways. Crotons (*Codiaeum variegatum*) are also

markedly beautiful under these conditions. Other species with distinctive foliage include the well-known Indian Rubber plant (*Ficus elastica*) of which there is a huge specimen and the closely related Indian Laurel (*F. nitida*).

The Dragon tree of the Canary Islands (*Dracaena draco*), famed for a very long life expectancy, is grown at Orotava. Two much more renowned specimens however, are found in other parts of Teneriffe. One of these, which is claimed to be the oldest and largest specimen in existence, and at least 2,000 years old, is at Icod. A close runner-up is the Dragon tree of La Laguna, a few miles from the Botanical Garden (Fig. 87). Other interesting indigenous trees cultivated in the Garden are the beautiful Canary Islands pine (*Pinus canariensis*), and the Canary laurel (*Laurus canariensis*).

The Ombu tree (*Phytolacca dioica*) is conspicuous in the Garden because of its peculiar habit of growth at the base of the stem. It is a large specimen with a broad top and originates from the Argentine pampas. Another very tall tree, small specimens of which are popular for pot culture in this country, is the Norfolk Islands pine (*Araucaria excelsa*).

Several flowering climbers can be seen in the Botanical Garden at Orotava. Winter-flowering bougainvilleas are represented and in their brilliant tones of scarlet, purple and lilac are very popular plants everywhere in the Canaries. *B. glabra* is a summer-flowering species, also grown in the Botanical Garden. Other beautiful climbing species include several jasmines, such as the Spanish or Royal jasmine (*Jasminum grandiflorum*), which bears white fragrant flowers, *J. azoricum* is another white-flowered species. The Purple Wreath (*Petrea volubilis*) is a showy climber with clusters of purple or blue flowers.

At Orotava there are innumerable species and varieties of flowering trees and shrubs and it is possible only to give a few examples of those which are most outstanding. The poinsettia (*Euphorbia pulcherrima*) grows 12 feet or more in height and gives a brilliant display in winter. The Coral trees (*Erythrina*) produce coral-red conspicuous blooms before the leaves. *Jacaranda mimosifolia*, perhaps one of the loveliest blue-flowering trees in existence, reaches a height of 50 to 70 feet in the Canaries.

Growing in the streets of Santa Cruz there are a number of tall evergreen trees with large showy clusters of crimson flowers in winter. These are Flame trees (*Spathodea campanulata*), which are also represented in the Botanical Garden. Flowering shrubs include various species of *Hibiscus* and the common oleander (*Nerium oleander*). There is also the Bird of Paradise flower (*Strelitzia reginae*) and a much taller species (*S. augusta*).

Tropical fruit trees of various kinds are well represented at Orotava. Thus there is the Mango tree (*Mangifera indica*), which in tropical countries is said to be of as much importance as the apple in Europe and North America. The Totumo tree (*Crescentia cujete*) bears fruits which

look rather like pumpkins. The Tree Tomato (*Ciphomandra betacea*) is another interesting species which produces red-oval-shaped tomato-flavoured fruits. Other interesting tropical fruits in the Orotava Garden are bananas (*Musa*)—extensively grown in the Canaries—pineapple (*Ananas comosus* var. *sativus*), Avocado pears (*Persea gratissima*), grape fruit (*Citrus grandis*) and the lemon (*Citrus limonium*). Various trees of economic importance are also seen at Orotava such as the Coca (*Erythroxylon coca*), from which cocaine is obtained, the coffee plant (*Coffea arabica*) and *Cycas revoluta*, one of the trees from which sago can be obtained.

The Botanical Garden of Orotava is about 8 miles from Santa Cruz, the principal town and port of Teneriffe, and is easily reached by bus or taxi. It is certainly well worth a visit to anyone interested in seeing a comprehensive collection of tropical plants growing under natural conditions.

PLANTS AND PROBLEMS—XLIV

Question. Recently we bought a newly-built house on the most unbelievably poor, sandy soil. Undoubtedly it will need a great deal of organic matter added and the only material offered to us in bulk at an economic price is sewage sludge. Is it worth us buying a small lorry load? What is its particular manurial value?

Answer. Sewage sludge is the cheapest of all organic manures and on any type of soil it will prove of great value. When considering the use of sludge however, it must be remembered that the composition of different samples varies considerably. In addition, material suspended in raw sludge is sometimes coagulated by adding lime or aluminium and iron salts and the presence of iron or aluminium compounds in the resultant dry sludge may render it unfit for use as a manure. As to the lime, this will be found in sludge in *large* quantities and therefore the manure must not be used on acid-loving plants like azaleas and rhododendrons.

In comparison with farmyard manure, sludge contains more nitrogen and more phosphorus but much less potassium. As a result heavy dressings of sludge will tend to supply over-much nitrogen and cause some crops to make an unhealthy excess of succulent growth. From the physical point of view, sludge differs from animal manure by its lack of fibrous material upon which so much of the benefit of manure depends. It is by composting that the best value of sludge can be obtained because the excess nitrogen of the sludge is then utilized to break down other constituents of the compost heap. When sludge is used in this way, about a quarter of the compost heap should be sludge and, because of its nitrogen and lime content, it will *not* be necessary to use any form of compost activator.

To sum up, an occasional dressing of sewage sludge is useful for most crops and is usually applied about 3 to 4 inches thick, but steps must be taken to remedy its deficiencies as a plant food with appropriate dressings of sulphate of potash. This is particularly important for plants which require a lot of potash, like sweet peas, gooseberries and tomatoes.

NOTES ON SOME CULTIVATED VERONICAS—III 'PAGEI'

J. Souster
(*Royal Botanic Gardens, Kew*)

IN a little book printed in 1922 for private circulation and now rare, the late SIR GEORGE FENWICK, at one time editor of *The Otago Daily Times*, has left an account of a large collection of New Zealand Veronicas which was then growing at Lawrence, Central Otago. It had been built up by MR. H. HART, a retired brewer, and MR. H. L. DARTON, a master at Lawrence High School, and was growing in the garden of "Wetherstones", MR. HART's property at Lawrence. Their interest in these plants, SIR GEORGE tells us, was due to a meeting with MR. PETER BARR, of the London firm of Barr and Sons, who had visited the Dominion some years before, and had commented on the fact that New Zealanders appeared to him to under-value their native plants and to fill their gardens with nothing but "imported" ones.

MESSRS. HART and DARTON began collecting veronicas about 1915, and having built up a collection, distributed them freely. It was a public-spirited enterprise aimed at securing a great appreciation of native plants, and they seem to have pursued it with commendable energy and enthusiasm. They obtained plants from nurseries and from public and private gardens, collected them in their native localities and enlisted the help of other collectors. Their search extended beyond the main islands of New Zealand to outlying groups such as the Chatham Islands and Auckland Islands. By 1922, they had in cultivation 86 recognized species, 30, as they supposed, new species, and over 250 "varieties".

Unfortunately, their zeal as collectors was not matched by an understanding of scientific collecting methods. They appear to have left no records of the origins of their plants, nor to have preserved herbarium material, and as many of the plants were in any case obtained from cultivation, their origins may well have been forgotten even before HART and DARTON received them. The result of such collecting of plants which hybridize freely in nature and in cultivation can easily be imagined.

Many of the plants were doubtful entities to which no botanist with any sense of responsibility would venture to give names, without more knowledge of their origins and the opportunities for lengthy investigation. Where botanists failed to supply names, the collectors made good the deficiencies, mostly by creating Latin binomials commemorating their friends and collaborators. These names were taken up by nurserymen and many passed into circulation in New Zealand, though not validated by publication with adequate descriptions.

Of some 30 to 40 or even more plants distributed under these invalid names, a few are known to have reached this country, but at this stage it is not always possible to know which are Hart and Darton names, and still less possible to be sure to what plants they were originally applied. Among the few exceptions to this generalization is the plant called "Veronica Pagei", which commemorates EDWARD PAGE, a native of Sussex, who went to New Zealand in 1912. He was employed in the Dunedin Botanic Garden, where he became a foreman and remained until 1926, when he was appointed Superintendent of Grounds and Gardens to the Otago Hospital and Charitable Aid Board. MR. A. W. ANDERSON, of Timaru, who first brought HART and DARTON'S activities to my notice, tells me that a large collection of their plants was growing in the Dunedin Botanic Garden in 1926, and that it included a "Veronica Pagei", which from the description appears to have been the plant here known under that name. Records show that Kew received a plant under this name from the Dunedin Botanic Garden in June 1925. There must have been an earlier introduction, though, for MR. N. G. HADDEN tells me he received it from a Scottish garden in 1922, and it was a plant propagated from this stock which received a Preliminary Commendation when shown at Chelsea, in 1947, by MESSRS. A. R. and K. M. GOODWIN. MR. A. R. GOODWIN has kindly supplied plants for comparison with the Kew stock, with which they appear to be identical. At Chelsea this year it received an Award of Merit when shown simultaneously by The Director, Royal Botanic Gardens, Kew, and by The Principal, Waterperry Horticultural School. In this case at least, the application of a Hart and Darton name may be considered established beyond reasonable doubt.

Whatever the uncertainty about the origin of this plant, there can be none about its status. From the fact that the shrubby veronicas are normally propagated vegetatively, it might have been suspected to be a clone. Any lingering doubt is dispelled by the observation that "Veronica Pagei" is male sterile, so that it could not be propagated true to name by seed. Being a clone, it falls within the scope of the *International Code of Nomenclature for Cultivated Plants*, and as it is sufficiently distinct to merit a cultivar name, that name must conform to this Code. Fortunately, no great change is necessary. "Pagei", invalid as a specific epithet, is acceptable as a cultivar name if capitalized and enclosed in single quotation marks or otherwise typographically distinguished from a botanical name. Even those who would transfer the shrubby veronicas

to the genus *Hebe* may still refer to Veronica 'Pagei', "Veronica" here being used as the accepted popular name for all this group of plants.*

Because of its failure to produce pollen and its early flowering which reduces the chance of cross-pollination, Veronica 'Pagei' seldom develops mature capsules. In the absence of these, there seemed no reason to doubt that it was one of the numerous forms of *Hebe pinguifolia* (*Veronica pinguifolia* Hook. f.), especially as the ovary is pubescent. In 1957, however, a plant growing in the Kew collection flowered at the same time as an adjacent plant of *Hebe vernicosa* var. *canterburiensis* and bees were seen to be active on both plants. Capsules were subsequently produced and these differed from the normal capsule shape of *H. pinguifolia* in their greater length and more acute apex. In these respects alone, there is an approach to the closely allied *H. carnosula*, and the possibility of a hybrid origin presents itself. This could well have occurred, as both species have long been grown in New Zealand gardens, though, it would seem, not growing together in the wild state. It would be unwise to press this suggestion too far, though, for much remains to be discovered about the variability of both species, and doubt has been cast on the need to recognize *H. carnosula* as specifically distinct from *H. pinguifolia*. All things considered, it is probably best to refer PAGE'S Veronica to *Hebe pinguifolia*. As only most inadequate descriptions of this plant have yet been published a fuller one is given here.

Hebe pinguifolia (Hook. f.) Cockayne et Allan. cv. **'Pagei'** stat. et comb. nov.

Veronica Pagei Hort.

V. Pageana Hort.

A low shrub, ultimately exceeding 1 m. across, usually under 30 cm. high. Branches of young plants ascending and arching outwards at length prostrate and rooting. Internodes about 0·5 cm. long. Stems at first purplish-glaucous, becoming greener but purple persisting at nodes, glabrous except for two opposite puberulent lines. Old stems grayish-brown. Leaves spreading at right-angles to stem when mature or more or less reflexed, elliptic-obovate, 0·9 to 1·2 cm. long, obtuse, entire, concave, very glaucous with entire purplish margin, cuneate, sessile, midrib indistinct and lateral veins quite obscure.

Flower spikes in upper leaf axils, 1·5 to 2·5 cm. long including peduncle which measures about 1·0 cm. and is purplish-glaucous and glabrous except for opposite puberulent lines as on stem. Rachis puberulent, more or less purple. Lowest bracts variable, sometimes without flowers in their axils, lanceolate, 0·2 cm. long, to elliptic 0·4 cm. long, glaucous with purplish margin, especially when large, upper bracts green, ovate, ciliolate. Flowers sessile, except lower which are sometimes on pedicels up to 0·2 cm. long. Calyx 0·2 to 0·3 cm.; lobes oblong, about ⅔ length of calyx, upper obtuse, others slightly longer and sub-acute. Corolla white, tube equal to calyx, lobes spreading, about 0·3 cm. long, lowest elliptic, other ovate. Filaments white, a little shorter than corolla lobes. Anthers purple, becoming brown, sterile. Ovary as long as calyx, ovoid, compressed, puberulent. Style white, exceeding corolla, glabrous or sparsely hairy at base. Stigma small, capitate,

* Cf. Art. 17, *International Code of Nomenclature for Cultivated Plants*.

pale green. Fruit ovate, acute, puberulent, 0·25 to 0·4 cm. long. Seeds compressed, irregularly ovate to orbicular, pale yellowish-brown, 0·1 to 0·12 cm. long.

Acknowledgments

It will be clear that the history of this plant could not have been traced without the help of numerous correspondents. Several have already been mentioned. In addition to these, MR. M. J. BARNETT, M.B.E., late Director, Botanic Garden, Parks and Reserves, Christchurch, N.Z., MR. M. R. SKIPWITH, Superintendent of Reserves, Dunedin, DR. G. H. M. LAWRENCE, Director, Bailey Hortorium, Ithaca, New York, and MR. C. BUTTON, Cranham, Essex, have all supplied useful information, and MISS A. K. ELLIOTT, formerly City Librarian, Timaru, has kindly donated to the Kew library a personal copy of SIR GEORGE FENWICK's book. The help of all is acknowledged with gratitude.

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WISLEY TRIALS, 1957–8

CINERARIAS

Eleven stocks of cinerarias were received in 1957 for trial at Wisley. The trial was sown under glass on July 10, 1957, in seed pans and the resulting seedlings were pricked off into boxes. The plants were first potted into 3-inch pots and later into 5-inch pots; the final potting being into 7½-inch pots. The plants were grown in a cool glasshouse from the time of the final potting.

The trial was inspected by a sub-committee of the Floral Committee A on January 14 and February 14, 1958, and on its recommendation the Council of The Royal Horticultural Society has made the following awards to cinerarias.

The number in brackets after the description of the variety was that under which it was grown in the trial.

Grandiflora group

MATCHLESS. (Raised, introduced and sent by Messrs. Watkins & Simpson Ltd., 26–29 Drury Lane, Covent Garden, London, W.C.2.) **A.M.** February 14, 1958. Plant 13 to 15 inches high, erect, compact; leaves large, dark green; inflorescence 13 to 16 inches across, thirty-three to forty-four flowered; flowers 3 inches diameter, single; florets medium length, broad, blunt, overlapping, mixed colours, light blue, dark blue, pale mauve, dark mauve, red, pale pink, white tipped blue, white tipped pink, white tipped pale mauve. [10]

SUTTON'S SINGLE SUPERB MIXED. (Raised, introduced and sent by Messrs. Sutton & Sons Ltd., Reading, Berkshire.) **A.M.** February 14,

1958. Plant 12 to 16 inches high, erect, compact; leaves large, dark green; inflorescence 12 to 13 inches across, twenty-five to thirty-five flowered; flowers 2½ to 3 inches diameter, single; florets medium length, broad, blunt, overlapping, mixed colours, light blue, dark blue, red, pale pink, pale mauve, mauve, crimson, white tipped blue, white tipped pale pink, white tipped mauve. [8]

PLANTS TO WHICH AWARDS HAVE BEEN MADE IN 1958

Androsace imbricata F.C.C. April 29, 1958. A native of the Southern Alps, favouring sunny, dry, granite cliffs. In this country it is best grown in the alpine house. It forms dense grey cushions of tightly packed small leaves, less than ¼ inch in length. The plant exhibited was almost covered with tiny, numerous off-white flowers, each ¼ inch in diameter with a small yellow eye. Exhibited by Mrs. C. Greenfold, 85 Downs Road, Epsom, Surrey.

Cyclamen libanoticum F.C.C. February 18, 1958. This plant has possibly the loveliest flowers of any *Cyclamen* species. It is a native of the Lebanon, growing at from 2,600 to 4,500 feet, in rocky situations where the soil is chalky and there is plenty of shade, though in our climate it likes a hot sunny position. It was introduced into this country in 1899, and received an Award of Merit on January 15, 1901.

The pan exhibited contained thirty-four open flowers, Fuchsine Pink (H.C.C. 627/3) in colour, fading to white at the base, where there is a brilliant carmine spot on each petal. The leaves are autumnal, obcordate, dentate and crenate, with a pale green zone separating the inner portion of the leaf from the outer margin. The plant is not completely hardy, and in most areas benefits from some protection in winter, being best suited to the alpine house (Fig. 92).

Exhibited by Mrs. F. H. Herrmann, 4 North Square, London, N.W.11.

Camellia (reticulata × williamsii 'Mary Christian') 'Leonard Messel' A.M. April 29, 1958. This hybrid is typical of the *williamsii* grex inasmuch as it can be grown well out of doors and blooms early in the year. The flowers are semi-double, 4 inches across and contain about fourteen petals, each coloured a bright shade of Camellia Rose (H.C.C. 622/3). In the centre of the flower the stamens are bunched together prominently. Exhibited by Mrs. L. C. R. Messel, M.B.E., and The National Trust, Nymans Garden, Handcross, Sussex (Fig. 81).

Gladiolus 'Gillian' A.M. March 18, 1958 (shown as No. 5310). Another of the hybrids raised by MR. BARNARD, this is of the same parentage as *G.* 'Sybil' (*G. tristis* × *G. bicolor*) × *G. carinatus*. It is very similar in shape and size, but differs in that the flowers are slightly less fragrant, and of more contrasting colours. The upper segments are Aconite Violet (H.C.C. 937/3), veined with white, and the lower

segments Chartreuse Green (H.C.C. 663/2), tipped with Aconite Violet. Exhibited by T. T. Barnard, Esq., M.C., M.A., Ph.D., Furzebrook House, Wareham, Dorset (Fig. 91).

Both *G.* 'Sybil' and *G.* 'Gillian' are suitable subjects for the cool greenhouse.

Gladiolus 'Sybil' A.M. March 18, 1958 (shown as No. 5311). This hybrid, raised by the exhibitor, resulted from a cross between *G. carinatus* (the pollen parent) and a seedling of (*G. tristis* × *G. bicolor*). It is a slender plant, with two or three narrow, deeply pleated leaves, and a wiry stem about 20 inches long bearing five or six delightfully fragrant flowers. Each flower is funnel-shaped, somewhat hooded, nearly 3 inches long and 2 inches wide. The colour of the upper segments is close to Pansy Violet (H.C.C. 033), with white venation; the lower segments and throat are Uranium Green (H.C.C. 63/2), and are tipped with Pansy Violet. Exhibited by T. T. Barnard, Esq., M.C., M.A., Ph.D., Furzebrook House, Wareham, Dorset (Fig. 90).

Rhododendron quinquefolium A.M. April 29, 1958. This charming deciduous azalea is rarely seen in gardens as it is not of the easiest culture. Notwithstanding, MR. DE ROTHSCHILD showed a particularly fine vase of cut sprays well covered with delicate, white flowers each faintly marked on the upper lobes with olive-green spotting. The corolla was rotate-campanulate in shape and 1½ inches across. In the main the flowers occurred in pairs although some did so singly. Exhibited by E. de Rothschild, Esq., Inchmery House, Exbury, nr. Southampton (Fig. 82).

Saxifraga retusa A.M. April 9, 1958. Described by FARRER as "the most precious jewel of the Porphyrions", this dainty Southern European perennial, somewhat reminiscent of the well-known *S. oppositifolia*, occurs at high altitudes in non-calcareous soils from the Pyrenees in the West to the Carpathians in the East. It forms thick mats of procumbent branches which are densely clothed with pairs of tiny oval leaves. The numerous flowering stems are erect and only an inch or two high, each bearing from three to five flowers, Lilac Purple (H.C.C. 031/2) in colour. The specimen exhibited almost filled a 7-inch pan, there being about a hundred flowering stems, though hardly any of the flowers were open at this time. Exhibited by Mrs. Walter Duncan, Newlands, Dumfries (Fig. 88).

BOOK NOTES

"Experimental Control of Plant Growth." By F. W. Went. 328 pp. Illus. (Chronica Botanica Co. and The Ronald Press, New York.) $8.50.

One of the most prominent post-war advances in botanical and horticultural research has been the development of facilities for studying plant growth and development under controlled climatic conditions, made possible by technical advances in air-conditioning and artificial lighting. The initial impetus to this line of work came in a large degree from the construction of the Earhart Laboratory at the California

Institute of Technology, designed and organized by Dr. Went. Because of its large size and technical complexity the laboratory came to be nicknamed the "Phytotron" (by analogy with the "Cyclotrons", etc., of physics) and this term has gained almost universal usage.

The laboratory provides facilities for growing plants either in air-conditioned greenhouses, using natural daylight and rigorously controlled temperatures, or in growth-chambers entirely under artificial illumination from fluorescent tubes. With the aid of such laboratories it is now possible to study the responses of plants to various environmental factors under accurately controlled conditions. Such facilities are essential both for fundamental botanical research and for experimental horticulture. A detailed knowledge of the climatic requirements of a crop enable us not only to indicate the most suitable regions of cultivation, but also to control its development at will, as in the forcing of strawberries, or all-the-year round production of chrysanthemums. Dr. Went's own researches on tomatoes led him to make recommendations which have greatly increased the yields of this crop in California.

The book includes a description of the Phytotron and a report of some of the main experimental results which have emerged from its use. The first part of the book, dealing with the details of construction of the laboratory will be of particular interest to workers in botanical and horticultural research. The climatic responses of a number of individual plants such as tomato, potato, peas, beans, strawberry, sugar beet and various garden flowers are described in the second section. The third part covers a number of general topics, including discussions on plant climatology, ecology, germination and the effects of smog. It will be evident that this is of the nature of a miscellany, and in this respect it is a very unusual type of scientific book.

While there can be no doubt as to the ultimate practical importance of the studies described by Dr. Went, this book is probably more suitable for workers in research stations and horticultural educational institutions than for the professional grower and amateur. Nevertheless, it is of the utmost importance for the further development of horticulture that the main body of knowledge thereby gained should be widely disseminated. Botanists and horticulturalists throughout the world owe a debt to Dr. Went for his pioneering work and for the example he has set them in the development and use of controlled-environment facilities.

P. F. WAREING

"African Violets, Gloxinias, and their Relatives. A guide to the cultivated Gesneriads." By Harold E. Moore, Jr. 323 + xii pp. Five coloured plates, and fifty line-drawings in the text. Med. 8vo. (New York and London: The Macmillan Company, 1958.) Price 45*s.* 6*d.* net.

The title of this book is grossly misleading, for of the 210 pages devoted to the genera, species, hybrids, and cultivars only twenty-two concern African violets and gloxinias, thirteen and nine pages respectively. The truth is that Dr. Moore's book is a comprehensive account of all the *Gesneriaceae* known to be in cultivation, and an indispensable work for all who are interested in this fascinating family. It is a model of what such a book should be, thorough, reliable, written in a clear readable style, well-illustrated, and providing information about all aspects of the plants. It cannot be too strongly recommended, and it is hoped that nobody will be deterred from acquiring it by its unfortunate title.

The book is in three parts. First, fifty pages of general matter under the following chapter-headings: Gesneriads at Home, that is, accounts of plants in typical environments in different parts of the world; Gesneriads under Culture—details of management both indoors and in the garden; Propagation; Pests and Diseases; Hybrids, Mutants, and Hybridization—a chapter which includes hints for the hydridizer, and comments on heredity, mutants and polyploids.

The second and major part, occupying 210 pages, deals with the plants in detail. It starts with an Introduction in which are given the characteristics of the family (with which is combined an explanation of the botanical terms used), a note about nomenclature, advice on the indentification of the plants, very useful lists of the genera which have such characters as alternate leaves, scaly rhizomes, yellow flowers, and so on, and finally a key to the genera in cultivation; the key is very well constructed and based on clearly distinguishable characters, and should be easy to use. After this the genera, forty in all and grouped under such headings as Gesneriads with Tubers, Gesneriads with Two Stamens, are dealt with individually. For each genus there is an account of the genus as a whole, including a description, a key to the species, descriptions of and notes on each species in turn, and an account of hybrids and cultivars where such

exist—in this connection, the pages dealing with the garden "Gloxinias" and the *Streptocarpus* hybrids should be most useful. For all except two of the genera the text is supplemented by excellent black-and-white line-drawings, while fifteen of the genera are also illustrated by the twenty-one figures in the five colour-plates, which are very well-drawn and reproduced. The illustrations are the work of Marion Ruff Sheehan.

The third part of the book, fifty-six pages, comprises a number of Appendices. First, a reference list of genera and species with the names of authors and places of publication; synonyms are given under the accepted name and there is often a reference to a work containing a coloured picture of the plant, such as the *Botanical Magazine*; a few additions could be made to this last feature, for example *Titanotrichum oldhamii* (N. Ser., t. 78), *Columnea* × *banksii* (N. Ser., t. 200) and *Asteranthera ovata* (N. Ser., t. 15) are all represented in the *Botanical Magazine*. Then there is a list of names of genera and species showing pronunciation and meaning; this is followed by a list of chromosome numbers for those species for which they have been determined, a selection of references to literature, and a glossary of botanical terms. Finally there is an Index.

Altogether a most useful book; there cannot be much that is known about the gesneriads in cultivation which is not to be found within its covers.

J. ROBERT SEALY

"Die Cactaceae", Vol. I. By Curt Backeberg. 638 pp. Illus. (Gustav Fischer, Jena, 1958.) DM 74.

Curt Backeberg has been interested in cacti for many years and now presents his system of classification of the *Cactaceae*. The work will be completed in three (possibly five) volumes, the first of which is now published; this consists chiefly of descriptions of the genera and species, preceded by chapters on the historical aspect, the importance of collections for the preservation of rare species and a discussion on the principles of classification; cultivation is not given in detail. The book is well produced and contains over 650 illustrations, some reproduced from earlier works, many of them new and very useful for the identification of the species; the few colour plates are rather variable in quality.

The classification is given in full and shows that the author now includes 227 genera, about 100 more than were recognized in Britton and Rose's classic monograph published in 1919–23. There is a key to each genus, followed by descriptions of the species and varieties. So much detailed work must add to the knowledge of the subject, but it is to be regretted that the author has not followed the modern trend by which the number of genera is kept to a minimum, further division of the groups being accorded sub-generic rank. For instance, fourteen generic names are given in the sub-family *Opuntioideae* (which is as far as the present volume goes) and several of these genera are based on vegetative not floral characters; other workers are already re-combining some of these genera under the inclusive genus *Opuntia*. Botanists will not approve the author's disregard of the *International Code of Botanical Nomenclature*, shown in the spelling of certain generic names, such as *Mamillaria* with one "m", a form which has never been in use in English-speaking countries. It indicates a lack of co-operation with other botanists to disregard the findings of an international body designed to bring order out of botanical chaos. It would not be fair to give a considered judgment on a monograph until the whole has been published, but one rather feels that more will have been added to the labours of the botanists than to the encouragement of the many amateur growers of cacti.

VERA HIGGINS

"Looking at Chromosomes." By John McLeish and Brian Snoad. Demy 8vo. Illus. (Macmillan.) 16s. net.

Plant breeding has been carried on for many years by the simple processes of hybridization and selection. The modern plant breeder, however, must know also the fundamental facts about cytology. Studies of species hybrids, so important in breeding for disease resistance, or in producing novelties, cannot be carried out efficiently without cytology. Nor could explanations be given on the effects of chromosomal changes induced by radiation treatment.

This little book by two workers of the John Innes Horticultural Institution presents the main facts about chromosome behaviour in plant cells in a general satisfactory manner, though the style is lacking in literary quality, being often ponderous. Indeed, the authors could benefit much by studying the art of writing. A purist might object to the statement that "there are genes for characters such as flower colour, etc."

The great merit of the book lies in the admirable series of photographs and drawings accompanying the text. With the aid of these the general reader should be able to understand the processes of mitosis and meiosis in relation to heredity. More especially will the plant breeder be helped, though he should bear in mind that the cytology of some plants is a very difficult game indeed. There is a useful appendix of books for reference and further reading, to which might be added the invaluable Year Books of the United States Department of Agriculture for 1936 and 1937. The book is warmly recommended.

S. C. HARLAND

"Licht und Temperatur im Zierpflanzenbau." By W. Rünger. Illus. Demy 8vo. 163 pp. (Paul Parey, Berlin, l'inderstrasse 44–7, S.W. 68.) DM 16.80.

This book reviews the considerable volume of literature relating to the influence of the environmental factors of light and temperature on the growth and flowering behaviour of commercial glasshouse flower crops.

The first part of the book consists of an introduction to the physiology of germination, growth, flowering, and dormancy with special reference to the influence of temperature and photoperiod. A short elementary review of the physics and measurement of light and temperature is given, but unfortunately does not include practical details. The following chapters review recent research results in the fields of seed dormancy and the effects of low temperature and photoperiod on flowering and bud dormancy. A section is devoted to practical methods of regulating light and temperature and covers artificial irradiation to stimulate photosynthesis, the manipulation of day-length, the use of growth rooms, and the low temperature storage of cuttings and cut-flowers.

The final and most useful section of the book reviews the available information concerning the developmental physiology of individual flower crops and its applications in commercial practice. In all, fifty-eight species are discussed and references are given to the original literature: the amount of space devoted to an individual crop varies and depends on the amount of research which has been carried out, for instance nineteen pages are devoted to chrysanthemum, two pages to carnation and only a half-page each is given to cyclamen and rose.

The book is well produced and illustrated with diagrams and photographs, many of them taken from original research publications. A considerable amount of scattered literature is drawn together, which should prove valuable for students of horticulture and commercial growers seeking information on the possible applications of day-length and temperature regulation to the growing of flower crops.

D. VINCE
P. M. CARTWRIGHT

"Handboek der Bloemisterij, ten dienste van het middelbaar tuinbouw-onderwijs en de praktijk. Deel III[A] Speciale cultures en exotische planten. Archegoniatae, Gymnospermae en Monocotyledonae." By D. van Raalte. 302 pp., 149 figures. (Uitgevers-mij. C. Misset N.V., Doetichem, Netherlands.) 13.50 guilders.

The present book is the first part of the third volume of a Dutch "Manual of Floriculture", meant for agricultural colleges as well as for practical horticulturists or floriculturists. This volume treats in systematic order "exotic plants" of floricultural importance belonging to the Musci, Hepatics, Pteridophytes, Gymnosperms and Monocotyledons. The second part (III[B]) will deal with Dicotyledons.

Short but very superficial descriptions are given of some of the higher taxonomic units, whilst under the species particular attention is paid to practical information on propagation and culture and also to the more common diseases. The main value of the book lies in these practical details. The derivation of most of the generic names is given, these having evidently been taken from Backer's dictionary of scientific plant names, which, however, is nowhere quoted. The system followed is that of Wettstein, but no references are given to standard books on plant taxonomy.

The genera and species are sometimes treated in alphabetical order under the families, but in other cases in accordance with a rather detailed taxonomic system. An alphabetical index compensates for this lack of uniformity.

Since the book is also meant to be a text book, it would have been better for teaching purposes to have paid more attention to terminology, simple principles of nomenclature, short but clear-cut descriptions of families and genera, etc., rather than to the provision

of so many names of subdivisions of families, etc., names which are of interest only for the professional taxonomist (see e.g. the treatment of the Orchids and the Palms). In some cases literature is quoted under the genera, but the choice is a very haphazard one.

The illustrations are rather poor and can hardly be considered of any use for recognizing the plants.

F. A. STAFLEU

Amateur Gardening Handbooks: No. 27, "The Garden Frame", by Louis N. Flawn; No. 32, "Garden Planning", by S. J. Poole. 92 pp. (Collingridge.) 4*s*.

With the aid of a frame, gardening becomes both more interesting and more rewarding. The different types of frames and suitable sites are considered and so also are the various methods of heating, including the use of horse manure when obtainable. A frame can be most useful for propagation and for over-wintering slightly tender plants. There are also chapters on how frames may be used for growing pot plants, bulbs and vegetables, including cucumbers, melons and tomatoes.

The planning of new gardens presents many problems, particularly on new housing estates. However, *Garden Planning* will also help those who wish to re-plan existing gardens. Great emphasis is laid on the importance of proportion, both with regard to the ground plan and the plants used. Twenty-three plans are shown and discussed and many useful ideas may be gleaned from these.

"Fruit Tree Raising." Bulletin No. 135, Min. of Agric., Fish. and Food. 50 pp. Illus. (H.M.S.O.) 5*s*.

This bulletin has been thoroughly revised and considerably enlarged. Detailed information is given on producing reliable and healthy fruit trees, from the raising of the stocks, through the budding and grafting stages, to the first years of training. The more recent method of double-shielding is also described and illustrated. Descriptions of the new Malling–Merton woolly-aphis-resistant stocks are included and clear photographs to illustrate these have been added. Two useful new chapters have been added: one on the recognition of stocks and the second on virus diseases, both of which will be helpful to growers who do their own roguing.

"Your New Garden." By A. G. L. Hellyer. Revised Edition. 247 pp. Illus. (Collingridge.) 18*s*.

This book will be a great help to those who have the job of making a garden out of the rather hopeless looking piece of ground left behind by the builders. The ideas and suggestions for the work involved and the best order in which they should be tackled are practicable and reliable. The section on the first year's work contains useful information on such things as levelling and calculating the quantities of material needed for paths, walls, etc. Hedges, paths, lawns, and the planting of the fruit garden are also covered in this section. The more permanent features of the flower garden are left for the second year and, finally, in the third year, the glasshouse is considered. The numerous photographs and line drawings all help to emphasize points made in the text. Time, money and disappointments will be saved if Mr. Hellyer's advice is followed.

"Dutch Lights for Growers and Gardeners." By A. R. Carter. 194 pp. Illus. (Vinton.) 12*s*. 6*d*.

The subject is dealt with thoroughly from the choice of lights, their erection and choice of site, to the marketing of the various suitable crops. Also included are twenty-five carefully-worked-out cropping plans, designed to get as much as possible from the lights, used both as single- and double-space frames and as Dutch light houses in their different forms, including mobile. Although written from the commercial angle this book will help students and private gardeners, who will be able to adapt much of the information to suit their individual requirements.

"The School Garden." By J. E. Hancock. Part I: 136 pp., Illus., 5*s*.; and Part II: 205 pp., Illus. (Macmillan & Co.) 7*s*. 6*d*

These two books are designed as text books for schools which have the facilities for teaching gardening. As more and more schools are doing so, this series will be a useful guide to both teachers and pupils. They contain lessons and exercises, together with a certain amount of elementary botany and plant physiology, as well as practical horticulture. Both books contain a number of diagrams, plans and illustrations.

"Window-sill Gardening." By George Melas. 95 pp. Illus. (Duckworth.) 12*s*. 6*d*.

The average window box can be a blaze of colour in the summer but tends to be a drab affair in the winter months. The blaze is usually supplied by annuals and the bedding type of plants. In this book, however, the author deals exclusively with perennials particularly with what he terms alpines (though strictly speaking, some plants mentioned have no claim to this title). Mr. Melas does not advocate the rather large and cumbersome "box" but describes how smaller containers may be made and used. Draughts and polluted atmosphere are the "undoing" of window-sill gardening and methods by which the plants may be protected from both are described and illustrated.

"Gardening with Shrubs and Trees." By Stanley B. Whitehead. Demy 8vo. 216 pp. Illus. (Gifford.) 18*s*.

Within the space of a comparatively short book Dr. Whitehead has managed to pack in a very large amount of carefully selected advice and information and the result is one of the best books on the subject that I have seen for some time. It can be confidently recommended to all starting to garden and also to those wishing to save labour by devoting more of their garden to trees and shrubs. Those more experienced will also probably find some new ideas or suggestions in it. Dr. Whitehead writes from a scientific background and this appears in his book from time to time, thus giving it more authority and interest. About half the book is made up of chapters on general principles of placing, cultivation and propagation, while the other half gives us a short résumé of the seasons with the best shrubs and trees for each, and his selection seems a very sound one. The black-and-white illustrations are adequate and do represent plants in the garden giving a reasonable idea of their habit and growth. The colour work, however, should be improved in a subsequent edition. There is also a sprinkling of errors requiring correction. However, these detract little from the work.

PATRICK M. SYNGE

"Primulas." By A. G. Puttock. Demy 8vo. 128 pp. Illus. (Gifford.) 16*s*.
"Rhododendrons and Magnolias." By Douglas Bartrum. Demy 8vo. 176 pp. Illus. (Gifford.) 18*s*.

These two books deal with three of the largest and most popular genera of garden plants, but unfortunately in neither is the reviewer convinced that the author is writing from real personal knowledge and experience, while in both books there is a singular lack of generosity in acknowledging the sources of information. It is extraordinary to find a book on primulas which makes no mention of the great monographic work of Sir William Wright-Smith and Dr. H. R. Fletcher. A number of the primulas mentioned are hardly, and in many cases not at all in cultivation, and certainly not readily available, and these are intermingled quite indiscriminately with commonly grown plants. There seems to be no consistency in the use of capitals in specific names and more than one of them is misspelt.

In Mr. Bartrum's book the volume is divided almost equally between the two genera, and the section on magnolias is fairly complete and the advice on cultivation is adequate. The rhododendron section can in the space available be only a selection, but in that selection it cannot be acknowledged that in the reviewer's opinion the best species or hybrids have been chosen, and many of the latter are so old that they might only be obtained with difficulty, while such outstanding plants as 'Loder's White' appear to be omitted. The coloured illustrations can only be described as crude. Those in black-and-white are good but are for the most part pictures taken at the Society's Shows, although the source is not acknowledged, and represent clones which are of very fine quality but which are not in many cases generally available. Authors of horticultural books should at any rate be expected to have some acquaintance at least with the Code of Horticultural Nomenclature and it is distressing after this time to see names of cultivars placed invariably in double rather than in single quotes. It is regretted that neither of these books can be recommended to Fellows of the Society.

"Orchids, their Culture." By Bruce Hogg. 139 pp. Illus. (Cassell & Co.) 50*s*.

Mr. Bruce Hogg has endeavoured to make the best of two worlds—the southern and northern hemispheres—in his *Orchids, their Culture*, but the attempt is not very convincing. Wholly set up, printed and bound in Australia, the numerous pictures in colour and half-tone make it an attractive book. Specially written "to help the

beginner and the inexperienced as well as the experienced grower, and adapted to suit all climates" it attempts too much and seems likely to tire and confuse the novice, who must look elsewhere for a selection of orchids likely to give satisfaction. The chapter on "Cross Fertilisation and Growing from Seed" is interesting but rather beyond "the beginner", who is also likely to be frightened by apparatus devised for "Air Conditioning". A good book in many respects, but more suitable for an amateur who has already made some progress in the cultivation of orchids than for a novice.

CHARLES H. CURTIS

"Orchids for Everyone." By O. Eigeldenger. 144 pp. Illus. (John Gifford Ltd.) 25*s*.

Mr. Eigeldenger is an enthusiastic and successful amateur orchid grower and his book has been written for the purpose of encouraging other amateurs to engage in a floricultural hobby he has found to be both fascinating and rewarding. Beginning with a small collection in a greenhouse 9 feet by 6 feet he quickly discovered that the conventional methods of cultivation so often described by commercial and professional growers could not be adopted in a small structure. The great diversity of form and colour in orchid flowers fascinated him and by trial and error, observation and reasoning, he worked out his own technique. As success was achieved the collection increased in extent and diversity. He built and rebuilt his greenhouses and by diagrams and illustrations he shows how an amateur can construct his own orchid house and install a heating system.

The moisture staging, usually regarded as of prime importance in an orchid house he considers inessential, and gives his reasons for discarding it. Earthen floors have given place to those of concrete and again reasons are given for the preference. These two examples serve to illustrate the convincing candour of a man who has experienced all the difficulties that beset a novice and tells how he surmounted them. Eighty-three illustrations, some in colour, make this a most attractive publication. Moreover, almost all the illustrations represent plants and flowers grown by the author. I can think of no better present than this book for a novice or potential amateur orchid grower, who will find therein cultural advice, born of experience, and a descriptive list of species which should be well within the capabilities of an amateur with modest facilities.

CHARLES H. CURTIS

"Die Orchideen." By Hans Thomale. 2nd edit. 211 pp. 117 illus., 4 coloured plates. (Eugen Ulmer, Stuttgart.) 19.80 Marks.

This book is a second enlarged edition of a successful work which appeared some time ago. Although dealing almost entirely with the cultivation of orchids, the numerous hybrids so predominant nowadays in culture do not figure largely in its pages, but the emphasis is laid rather on the wild species and genera. The first two chapters give a general account of the occurrence and collecting of orchids and, in greater detail, of the various parts of the orchid plant and flowers. These form a useful and concise introduction to the more specialist chapters following. The long chapter on cultivation deals in turn with the conditions governing cultivation, cultural operations and culture in water-solutions and in dwelling houses.

Thomale has always been particularly interested in raising orchids from seed and the chapter on this subject consequently goes into the matter very thoroughly, describing the techniques and materials used in both the symbiotic and asymbiotic methods of raising seedlings. Following this chapter the commoner tropical genera and species in cultivation are described, while an interesting addition is a section on hardy outdoor terrestrial species. The book concludes with a calendar of operations during the year and a tabular summary of the cultivation of all the important genera.

The book is illustrated by over 100 figures, including many excellent photographs of species or hybrids, while there are also 4 plates in colour. The format is attractive, the print clear and pleasant to read.

V. S. SUMMERHAYES

"The Delphinium Society's Year Book, 1958." Edited by Ronald Parrett and Montague Lacey. 167 pp. Illus. (Delphinium Society.) 10*s*. 6*d*.

"Delphiniums are Versatile." By Violet Stevenson. 32 pp. Illus. (Delphinium Society.) 2*s*. 6*d*.

The fifth issue of the Delphinium Society's Year Book is once again interesting and well produced. The Society's activities are reported and there are a number of valuable articles. Mr. A. G. L. Hellyer discusses the uses of delphiniums with other

plants and suggests many grouping and planning ideas. Mr. Cairncross writes about the "Commonwealth Strain" and Mr. Reinelt gives the origin and history of the "Pacific Strain". Mr. E. J. B. Kidney records his experiences of raising species from seed and of the 'West o' the Rockies' hybrids grown from seed sent by Mr. Samuelson, of the U.S.A. One of the main features of the issue is Violet Stevenson's contribution called "Delphiniums are Versatile". This is published as a separate pamphlet and contains much of interest to those interested in floral arrangement. The five colour plates and the many black and white photographs are again of an excellent quality.

"Growing Plants Without Soil (Vermiculaponics)." By Maxwell Bentley. Demy 4to. 212 pp. Illus. (Hydro-Chemical Industries (Pty.) Ltd. Distributed by Blandford Press.) £3 12s. 6d.

"Soil-less Gardening for Flat and Home." By Maxwell Bentley. Royal 8vo. 140 pp. Illus. (Bendon Books (Pty.) Ltd. Distributed by Blandford Press.) £1 5s. 0d.

These are curious books. Their first aim seems to be to promote sales of vermiculite, especially the rather special brand produced from a site in South Africa. This interesting mineral, with the valuable property of holding much water yet remaining well-aerated, is a useful addition to the materials available to gardeners, and is likely to find increasing use. The second aim is to popularize the methods of hydroponics, growing plants in vermiculite (the less said about the term "Vermiculaponics" the better!) and to this end the literature has been scoured and is liberally reproduced, even to the extent of a quotation five pages long from Wallace's book on diagnosis of mineral deficiencies. This is all to the good, but the author is less successful where he attempts to paraphrase other technical publications. The sections dealing with plant physiology contain a number of misleading statements and incorrect explanations that will surely baffle the amateur gardener, and may even lead him seriously astray, as where the author suggests that tungsten lamps are the most practical form of artificial lighting for plant growth (not for affecting photoperiodic responses).

The author is obviously an enthusiast, and there is room for enthusiasm, but the constant recurrence of the same homilies and platitudes, even in consecutive pages, becomes wearisome. It may well be that "yields of over twenty times those obtained in soil" have been obtained in vermiculite tanks, but this cannot surely be the normal result when compared with good husbandry? Nor can there be any basis for the statement that plants grown in vermiculite use only one-twentieth of the water used in soil? And is it really possible to grow enough vegetables for four people all the year round in a vermiculite tank 50 × 4 feet?

The more expensive of the two books is hardly likely to appeal to the amateur gardener. The smaller one might be regarded as better value.

"Window Box Gardening." By Roy Genders. 104 pp. Illus. (W. and G. Foyle Ltd.) 3s.

This little book is full of ideas and suggestions on how to make the best possible use of window boxes throughout the year, paying particular attention to the difficult winter months. At the beginning there are instructions on how to make, fix and prepare window boxes and those indulging in window box gardening for the first time should pay special attention to these points. There are also chapters on the use of tubs, troughs and sinks for those who are lucky enough to have a small balcony or courtyard. Many plants are suggested and their particular points of merit for this type of gardening are pointed out.

"Plant Doctoring is Fun." By Cynthia Westcott. 280 pp. Illus. (Van Nostrand, 358 Kensington High Street, W.14.) 34s.

This is a chatty, personal account of Dr. Westcott's life as a consultant, lecturer and writer on plant diseases, and a very varied and full life it is too, including travel over most of the United States. It is obvious that her spraying schedules and programmes are much more numerous than those completed here, including such plants as azaleas, normally left unsprayed here. Still, her illustrations are proof of the value of the spray and the control of the petal blight. For extra measure the book ends with some quick cookery receipts most of which will certainly be new to English readers.

PATRICK M. SYNGE

"Herbs and the Fragrant Garden." By Margaret E. Brownlow. 140 pp. Illus. (The Herb Farm Ltd., Seal, Sevenoaks, Kent.) 28*s*.

The definition of herb used for this book is not the botanical one but rather that of a plant useful for cooking or attractive for its aromatic scent or even for its real or supposed medicinal values. The main part of the book consists of a useful and fairly exhaustive list of herbs with brief descriptions and notes on cultivation and uses in the kitchen. There are also chapters on the making of a herb garden, on the harvesting and drying of herbs and also one entitled "The History of Herbs". This should be a useful book to many who are interested in the growing of herbs and in their lore. It is to be regretted that the standard of the colour plates could not have been better to match the rest of the book. Many of them give no satisfactory impression at all of the herbs represented. There is a short introduction by Sir Edward Salisbury, late Director of the Royal Botanic Gardens, Kew.

"Pruning." By J. P. Wood. Amateur Gardening Picture Book No. 9. 60 pp. (Collingridge.) 7*s*. 6*d*.

This series of books follows the system of instruction by series of photographs developed in the Society's *Vegetable and Fruit Garden Displayed*. It covers the pruning of all kinds of woody material, shrubs, roses, fruit trees, including both renewal and regulated systems of pruning, soft fruits, peaches, vines, figs and cobnuts, and can be recommended to all those beginning a garden or taking over a neglected garden and in doubt as to how to prune.

"England's Forests." By H. L. Edlin. 216 pp. Illus. (Faber and Faber.) 30*s*.

This interesting book is really a catalogue of England's forests and woods (in which the author includes those of Wales) briefly annotated with silvicultural, topographical and statistical detail. It constitutes a useful *vade mecum* for those who may explore our countryside to the south of the Border and who are interested in woods. Of the vast areas of forest and scrub known to ancient Britons it is not safe to say with assurance that genuine vestiges remain, nor is it certain that some of the forests, so designated on the ordnance maps, were formerly so clad—the true meaning of the term "forest" in relation to sport or to trees in early medieval times being in some doubt. The author is on safer ground in his descriptions of our existing woodlands and the afforestations resulting from the operation of the Forestry Act, 1919.

The renaissance of forestry in the past forty years occurred just in time to save British woodlands from final dereliction. And in this there is one hard fact to remember: bygone efforts to revive our forestry have never persisted for more than a few decades. Already, so truly does history repeat itself, we hear murmurs that wood will become an out-moded commodity in spite of evidence all around us of the manifold uses to which wood and wood fibres are being put. We still depend on timber supply from abroad and prices have risen against us five or six-fold; we must continue our effort.

Furthermore our recent plantings and replantings ensure the maintenance of shelter for farms and grazings and do more than any other national movement, political or otherwise, to retain men and women in comfortable communities throughout our more remote countryside. Continuity of purpose is essential to long-term enterprise. May we hope against all earlier experience that, this time, the successful efforts of our foresters will not be allowed to fail.

The book is printed in clear type; it is well produced, abundantly illustrated and topographically indexed.

W. L. TAYLOR

"Pelargoniums." By Derek Clifford. 274 pp. Illus. (Blandford Press Ltd.) 42*s*.

Though there is an immense amount of literature on the genus *Pelargonium* much of it is not generally available to the gardener. Most people can have only a very vague idea of the immense range and diversity of material included in the genus and it is the aim of this book to cover the whole field, both species and the immense number of

garden varieties or cultivars. In my opinion it does so admirably and I have no doubt that it will be the standard work on the genus for a very long time.

Part One is practical and includes cultivation, propagation, even exhibiting. The author certainly can be unorthodox in his methods; for example inserting his cuttings in soaking wet compost will shock the old school of gardeners. It is also unusual to find bees listed under "Pests", but the author's idea of "biological control" by the provision of alternative bee plants near by is surely a master stroke. A minor slip in the historical notes gives Dillenius as first Professor of Botany at Oxford, he was in fact the fifth.

The second part, which must have been a laborious task indeed, covers cultivars group by group. The arrangement is excellent and the descriptions should be sufficient to determine whether or not the plant is true to name. Raiser and parentage are given where known and an attempt to assess the relative garden merit of the cultivars. The author has checked the flower colour by means of the Horticultural Colour Chart, in itself no light task. The method of including too closely allied varieties under one name will perhaps not meet with universal agreement. It is inevitable that in a work of this kind some old and familiar names have to go, such for example are *P. radula*, *P. salmonea*, and *P. tricolor*, but they are commendably few. Most of the illustrations, particularly those in colour, are extremely good, and this undoubtedly accounts for the high cost of production.

Part Three deals with a number of subjects including classification, cytology, sports, etc. The appendix dealing with the development of *P. hortorum* and its decorative foliage varieties I found particularly interesting. It also includes an extensive bibliography.

G. W. ROBINSON

"Grapes, Peaches and Nectarines." (Amateur Gardening Handbook No. 22.) By H. R. Tuffin. 92 pp. (W. H. & L. Collingridge Ltd.) 4*s*.

This excellent little book should be on the shelf of all those eager for good results with any of the three fruits concerned. Mr. Tuffin writes from a wealth of practical experience and his simple but lucid treatment of such fine arts as ventilation, damping down and pollination is extremely helpful. The inclusion of the increasingly popular bush peach is timely although would-be raisers of seedlings should be warned that in most cases peaches do *not* breed "true" from seed. 'Rochester' and 'Peregrine' are rightly quoted as being the best varieties for bush trees but there is sound evidence that 'Rochester' is much the more reliable of the two.

The section on outdoor grapes by one of the pioneers of this form of cultivation, Mr. Barrington Brock, is most interesting and, although one regrets that vines on *outside walls* have not been included, the use of cloches for this crop will whet many appetites.

E. G. GILBERT

The following books have been received:

"The Cyclamen." By A. G. Puttock. 92 pp. Illus. (John Gifford Ltd.) 13*s*. 6*d*.

"What Flowering Tree is That?" By Edwin A. Menninger. 175 pp. Illus. (Edwin A. Menninger, Stuart, Florida, U.S.A.) Paper $2.50, Cloth $4.00.

"The Hundred Finest Trees and Shrubs for Temperature Climates." "Plants and Gardens", Vol. 13, No. 3. 240 pp. Illus. (Brooklyn Botanic Garden, N.Y.) $1.00.

"Horticultural Machinery." Ministry of Agriculture, Fisheries and Food, Leaflet No. 1. (H.M.S.O.)

"Register of Growers of Certified Black Currant Bushes in England and Wales, 1957." (Ministry of Agriculture, Fisheries and Food.)

"Common Names of British Insect and Other Pests." By I. Thomas and H. W. Janson. 49 pp. Ministry of Agriculture, Fisheries & Food: Technical Bulletin No. 6. (H.M.S.O.)

"At the Farmer's Service." 64 pp. (Ministry of Agriculture, Fisheries and Food.)

"Beekeeping." By Colin G. Butler. Ministry of Agriculture, Fisheries and Food, Bulletin No. 9. 9th edn. 27 pp. (H.M.S.O.) 2*s*.

"Business Aspects of Horticultural Production Under Glass." By R. R. W. Folley. 26 pp. (Wye College, University of London.) 5*s*.

"Experiments on the Chemical Control of *Rhododendron ponticum*." By G. D. Holmes. Forestry Commission: Forest Record No. 34. 8 pp. (H.M.S.O.) 9*d*.

"The Use of Home-Grown Timber in Packaging and Materials Handling." By J. R. Aaron. Forestry Commission: Forestry Record No. 35. (H.M.S.O.) 2*s*. 6*d*.

"Cold Greenhouse Crops." By A. G. Puttock. 80 pp. (Foyles Handbooks.) 3*s*.

"Pansies and Violas." By Roy Genders. 80 pp. (Foyles Handbooks.) 3*s*.

"Auriculas." By Roy Genders. 151 pp. Illus. (John Gifford.) 16*s*.

"Cactus and other Succulent Plants." By H. M. Roan. 85 pp. Illus. Paper bound edition. (Nicholas Kaye Ltd.) 10*s*. 6*d*.

"Choice of Careers—Agriculture and Horticulture (Managerial and Technical Posts)." New Series, No. 85. (H.M.S.O.) 1*s*. 3*d*.

"Mes Geraniums." 31 pp. Illus. (La Maison Rustique.) 210 Fr. fr.

"Mes Poissons Rouges." 31 pp. Illus. (La Maison Rustique.) 210 Fr. fr.

"Mes Arbres d'Ornement." 31 pp. Illus. (La Maison Rustique.) 210 Fr. fr.

"Investment Aspects of Horticultural Production Under Glass." By R. R. W. Folley. 36 pp. Illus. (Wye College, University of London.) 5*s*. post free.

"Teach Yourself Botany." By John H. Elliott. 209 pp. Illus. (English Universities Press.) 7*s*. 6*d*.

"Begonias and Fuchsias." By H. G. Witham Fogg. 91 pp. Illus. (W. & G. Foyle Ltd.) 3*s*.

"General Microbiology." By R. Y. Stanier, M. Doudoroff and E. A. Adelberg. 670 pp. Illus. (Macmillan & Co. Ltd.) 50*s*.

"Vegetables in the Open." By Keith Paisley. 47 pp. Illus. (Evans Bros. Ltd. for The National Federation of Young Farmers' Clubs.) 2*s*. 6*d*.

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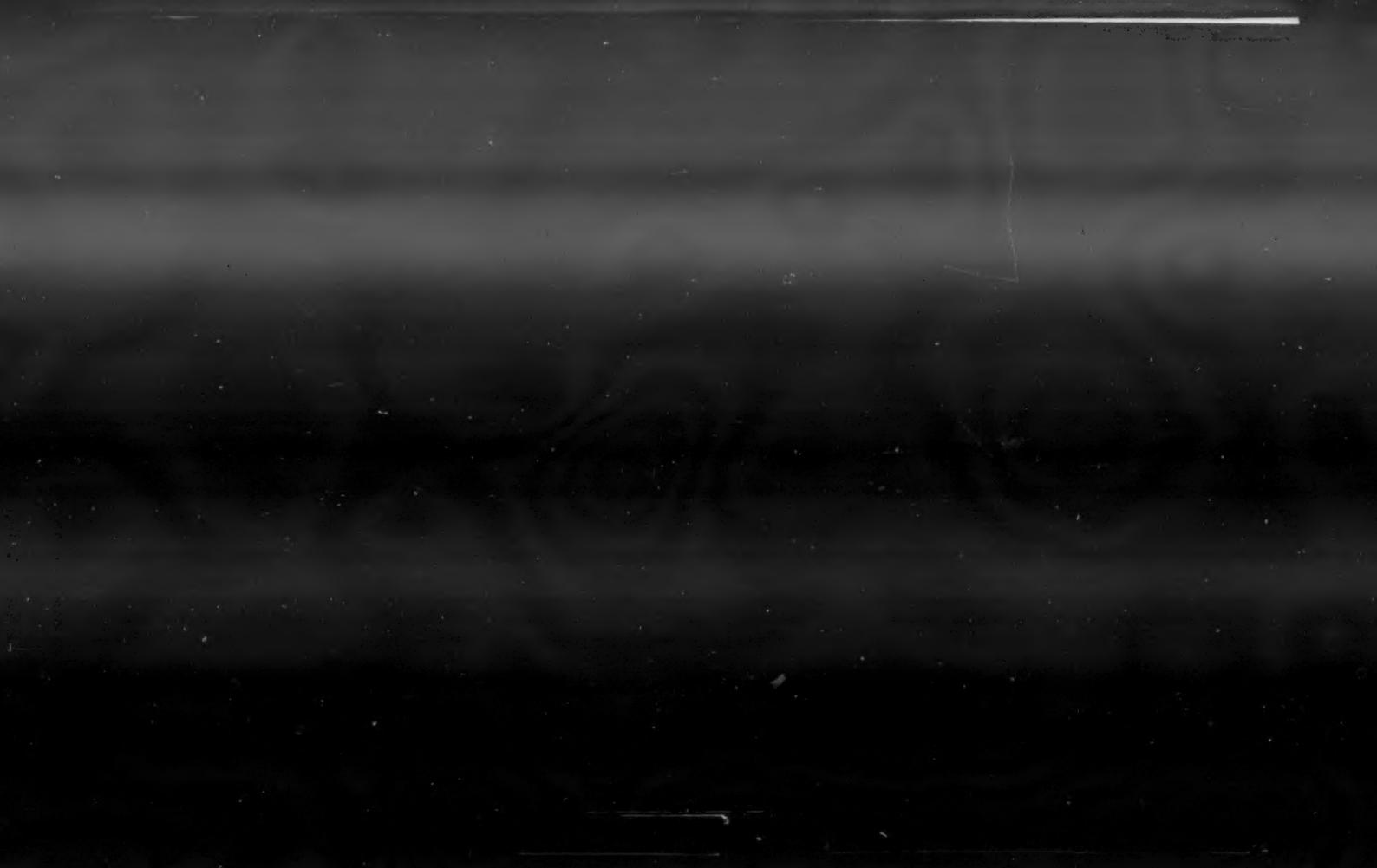

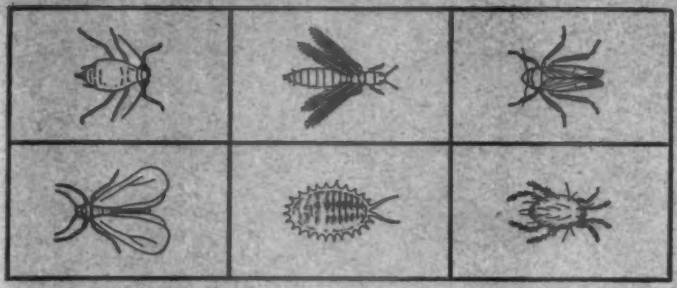

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